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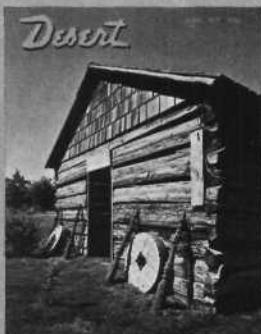
Desert
MAGAZINE

Volume 34, Number 6

JUNE, 1971

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ELTA SHIVELY, *Executive Secretary*

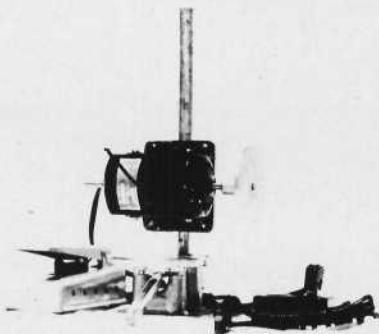
MARVEL BARRETT, *Circulation Manager*

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SEND FOR NEW CATALOG #9



A Peek in the Publisher's Poke

WITHIN THE past five years ownership of back country vehicles such as four-wheel-drives, dune buggies, trail bikes and camper-trucks has doubled, and so has the number of people who spend their vacation days exploring the deserts and mountains.

For instance, a "wilderness area" which five years ago was seen by only a few people today is visited by hundreds, and the number of visitors to more popular recreation areas has increased by thousands. The vast majority of these people are families who respect other people, private property and our public lands.

Unfortunately, there is a small minority of litterbugs, vandals and those who think their manhood is shown by the amount of damage they can do. These desert varmints are the direct cause of the increasing number of laws being passed today which continually restrict the use of land to all of us.

Not only are there new laws, but older statutes, which were not previously observed because of infrequent and sometimes excusable violations, which today are being rigidly enforced by park rangers, sheriff's deputies and private patrols.

A case in point was the recent arrest by two youths who were walking down the tracks of the San Diego and Arizona Eastern Railroad in San Diego County. They were arrested by two San Diego County deputy sheriffs who were patrolling the area due to the increase in vandalism during the past several years.

The officers were doing their duty and had no other choice than to cite the youths. Despite the fact the young men—both students at San Diego State College—were not doing any damage and were merely walking down the tracks, they were violating the law by being on posted and private property—which they knew and admitted.

The areas covered by Desert Magazine in our back country trips are within the confines of public lands which are supervised and administered either by the Federal Bureau of Land Management or by individual states. These lands will remain open to us as long as we abide by the rules and treat them as though they were our own property.

However, in many cases, these public lands are directly adjacent to private property, railroads, active mining operations and other restricted areas where trespassing, even innocently, can lead to your arrest.

So when exploring the back country, respect your public lands, the rights of others and DO NOT TRESPASS ON PRIVATE PROPERTY. Don't let your weekend excursion turn into a trip to a justice court.

The response from readers regarding the column "Notes From The Field" has been very meager. The format is a good one but can be sustained only by a flow of information on road conditions, new findings in the field, mine closures and things of interest to all. Let's see those postcards start rolling in!

William Shipley

Desert Magazine Book Shop

LOST MINES OF THE GREAT SOUTHWEST by John D. Mitchell. The first of Mitchell's lost mine books is now available after having been out of print for years. Reproduced from the original copy and containing 54 articles based on accounts from people Mitchell interviewed. He spent his entire adult life investigating reports and legends of lost mines and treasures of the Southwest. Hardcover, illustrated, 175 pages, \$7.50.

NEVADA'S TURBULENT YESTERDAYS by Don Ashbaugh. The best book about Nevada's ghost towns and the rugged individuals who built them. 346 pages, \$7.95.

DUTCH OVEN COOKBOOK by Don Holm. Wild-life editor of the Portland Oregonian, the author has spent his life exploring and writing about the outdoors, so his recipes for preparing food in a Dutch Oven come from experience. If you haven't had food cooked in a Dutch Oven, you haven't lived . . . and if you have you will find these recipes new and exciting culinary adventures—as well as his style of writing. Heavy paperback, 106 pages, \$3.95.

COLORFUL DESERT WILDFLOWERS by Grace and Onas Ward. Segregated into categories of red, blue, white and yellow for easier identification, there are 190 four-color photos of flowers found in the Mojave, Colorado and Western Arizona deserts, all of which also have common and scientific names plus descriptions. Heavy, slick paperback. \$4.50.

A FIELD GUIDE TO WESTERN BIRDS by Roger Tory Peterson. The standard book for field identification sponsored by the National Audubon Society. 2nd edition, enlarged with new section on Hawaiian birds. 658 in full color. Hardcover. \$5.95.

LOST MINES OF ARIZONA by Harold Weight. Covers the Lost Jabonero, lost mines of the Trigos, Buried Gold of Bicuner and others of southwestern Arizona. Paperback, \$2.00.

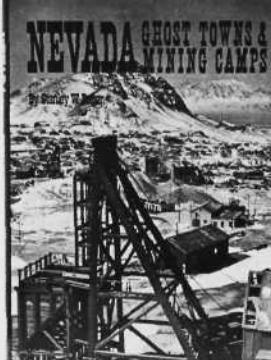
ROUGH RIDING by Dick Cepek and Walt Wheelock. Two veteran travelers have compiled an excellent book on how to drive and survive in the back country. Although based on driving through Baja California, the information is applicable to all areas of the West. Strongly recommended for both amateurs and veterans. Paperback, 36 pages, \$1.00.

EXPLORING JOSHUA TREE by Roger Mitchell. Excellent guide to Joshua Tree National Monument in Southern California. Paper. \$1.00.

THE CALIFORNIA DESERTS by Edmund C. Jaeger. Revised 4th edition is standard guide to Mohave and Colorado deserts with new chapters on desert conservation and aborigines. Hardcover. \$4.95.

GHOSTS OF THE ADOBE WALLS by Nell Murbar-
ger, the well known "roving reporter of the desert." An intimate chronicle of Arizona's once-booming mining towns, stage stations, army posts, marauding Indians and fantastic human characters. 380 pages, illustrated. Hardcover, \$7.50.

SOUTHWESTERN INDIAN TRIBES by Tom Bahti. An excellent description, history and current status of the Indians of the Southwest, including dates of their ceremonies and celebrations. Profusely illustrated with 4-color photographs of the Indian Country and the arts and crafts of the many tribes. Large format, heavy paperback, 72 pages, \$2.00.



**NEVADA GHOST TOWNS
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A GUIDEBOOK TO THE SOUTHERN SIERRA NEVADA by Russ Leadabrand. Illustrated with good photographs and maps, this volume covers the Sierra region south of the Sequoia National Park, including most of the Sequoia National Forest. Paperback, \$1.95.

SOUTHERN CALIFORNIA by the Editors of Sunset Books. An illustrated guide to Southern California, this is another in Sunset Books series. It presents in capsule form most of the interesting places to visit in the Southland. Heavy paperback, 8 x 11 format, 128 pages, \$1.95.

LOST DESERT BONANZAS by Eugene Conrotto. Brief resumes of lost mine articles printed in back issues of DESERT Magazine, by a former editor. Hardcover, 278 pages. \$7.00.

SOUTHWESTERN INDIAN ARTS & CRAFTS by Tom Bahti. Beautifully illustrated with 4-color photographs, this book describes the arts and crafts of the Indians of the Southwest and offers suggestions on what to buy and how to judge authentic jewelry, rugs, baskets and pottery. Large format, heavy paperback, 32 pages, \$1.00.

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OLD ARIZONA TREASURES by Jesse Rascoe. Containing many anecdotes not previously covered in Arizona histories, this new book covers haciendas, stage stops, stage routes, mining camps, abandoned forts, missions and other historical landmarks. Paperback, 210 pages, \$3.00.

GHOST TOWNS OF NEW MEXICO by Michael Jenkinson and Karl Kernberger. This exceptionally well written volume is more than a ghost town guide. It spans the history of New Mexico from the past to the present and brings back to life the conquistadors, gunmen, miners, merchants and politicians who won the West. Kernberger's photographs are gallery quality. Hardcover, quality paper, large format, 153 pages, \$7.50. Makes an excellent gift.

GHOST TOWNS AND MINING CAMPS OF CALIFORNIA by Remi Nadeau. The only good, hardcover book on the California ghost towns. We recommend it highly. \$7.50.

LOST MINES & BURIED TREASURES ALONG THE OLD FRONTIER by John D. Mitchell. The second of Mitchell's books on lost mines which was out-of-print for many years is available again. Many of these appeared in DESERT Magazine years ago and these issues are no longer available. New readers will want to read these. Contains the original map first published with the book and one pinpointing the areas of lost mines. Mitchell's personal research and investigation has gone into the book. Hardcover, 240 pages, \$7.50.

INYO MONO JEEP TRAILS by Roger Mitchell. Author of DEATH VALLEY JEEP TRAILS, veteran explorer Mitchell takes you on 18 different 4-wheel-drive trips into the Sierra Nevada Mountains, where he explores ghost towns, Indian territory and scenic canyons and mountain passes. Paperback, 36 pages, illust., \$1.00.

FOUR WHEEL DRIVE HANDBOOK by James T. Crow and Cameron Warren. Packed into this volume is material gathered from actual experience and presented in a detailed manner so it can easily be followed and understood. Highly recommended for anyone interested in back country driving. Paperback, illustrated 96 pages, \$2.50.

A TRAMP ACROSS THE CONTINENT by Charles Lummis. First published in 1892, this is a reprint of the personal experiences of the western historian who, in 1884, walked from Ohio to Los Angeles, covering 3507 miles in 143 days. Lummis writes in a matter-of-fact manner of adventures which make fascinating reading and give a keen insight into the people he encountered. This is a classic of Western Americana. Hardcover, 270 pages, \$8.50.

1200 BOTTLES PRICED by John C. Tibbitts. Updated edition of one of the best of the bottle books. \$4.50.

HAPPY WANDERER TRIPS by Slim Barnard. Well-known TV stars Henrietta and Slim Barnard have put together a selection of 52 of their trips through California taken from their Happy Wanderer travel shows. Has excellent maps, history, costs of gasoline consumption, lodging, meals plus what to wear and best time to make trips. Can't be beat for families planning weekend excursions. Paperback, large format, 150 pages, \$2.95.

Volume Number Two explores Arizona, Nevada and New Mexico with their areas ranging from modern resorts to ghost towns. 150 p. \$2.95.

FOR COMPLETE BOOK CATALOG WRITE TO DESERT MAGAZINE, PALM DESERT, CALIFORNIA 92260

Book Reviews

by Jack Pepper



PALM CANYONS
OF BAJA
CALIFORNIA
By
Randall Henderson

When the late Randall Henderson founded Desert Magazine 33 years ago, one of his first projects was to map the fan palms of the Southwest Desert. During the following 30 years he published his experiences in searching for the

palms—a search which ended with his death last year.

No canyon was too steep, no desert too arid and forbidding for Randall when he heard from someone that a grove of palms may exist in a remote waterhole many miles from any habitation. Many times he and his friends risked their lives in their attempts to find and record these unusual oases.

As those who are familiar with his other books on the desert, *On Desert Trails* and *Sun, Sand and Solitude*, Randall not only wrote of his experiences, but of his intense feelings about the desert to which he devoted his life. His writings are comparable to those of Thoreau and John Muir.

Although the trips into Baja covered in this book were made from June, 1946 to February, 1955, the publisher, Walt Wheelock, himself a Baja *aficionado*, reports he covered the same areas in 1970 and found only two cases where there had been extensive changes since Randall first explored the country.

Whether you want to follow in Randall's tracks or just go with him from the

arms of an easy chair, you will find this book an intimate look into Baja from the eyes of a man who was known as 'Mr. Desert.' Paperback, illustrated, 72 pages, \$1.95.

THE HINGES OF DESTINY

By
Ben Lee Parker



The author presents a first-hand account of what it was like to live as a cowboy (not the television version) during the last days of the "wild West." His life in Texas was crowded with outdoor excitement and adventure which he vividly describes. The book's subtitle is "A True Story of Ranch Life in the Early Twentieth Century."

He tells of his youth, during which he caught and trained wild horses and burros, worked in roundups and branding

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- "This volume can only be described as exquisite." *Los Angeles Times*
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pens, did a stint as cook on the trail and even tried to stop a stampede in which "Cussin' Sam" and his horse were trampled to death.

Among the highlights of the author's experiences were watering elephants in a circus and catching horses for Pancho Villa in the Big Bend area of Texas. Although the book contains the reminiscences of a man born at the turn of the Twentieth Century, the words do not ramble and are not repetitious. He makes the reader wish that he had been the author who lived a life which has disappeared with strips of concrete and tourists attractions.

Since his cowboy days, Parker has traveled extensively throughout the world. Today he runs his ranch in the Lone Star State where he raises Longhorn cattle. He holds an M.A. degree and is president of the Old Trail Drivers Association of Texas. Hardcover, illustrated with artist drawings, 149 pages, \$5.00.

MOCKEL'S
DESERT
FLOWER
BOOK

By
Henry and
Beverly Mockel



The well-known painter of desert wildflowers, whose color sketches are sold throughout the West, has compiled a novel presentation of his sketches and photographs which should be a welcome addition to flora enthusiasts.

Henry Mockel and his wife, Beverly, have spent their lives exploring the deserts of the Southwest and are perfectionists in everything they do. This book is no exception. The entire volume — whose

paper is compressed fiber — was created and hand-bound in their own studio in Twentynine Palms, California.

Care was taken not to use technical terms where informal English would suffice. Plants were selected which could represent the major subdivisions. The species generally differ only slightly, not enough to concern the casual observer. Their observations and illustrations were made in the field from living plants and hence a number of significant facts, not commonly recognized, are reported.

For easy identification, the color drawings and photographs of each flower appear on the right hand page from the text which describes in detail the flower, and where it can be found, plus other information which could only be learned by years of intimate search into the "heart" of each desert plant.

The artist's color drawings are microscopic in detail which make for easier identification of the flowers than from many photographs — and the color is probably more true since photographs are dependent upon changing light conditions. Again, showing their knowledge of desert travelers, they have made the book easy to carry.

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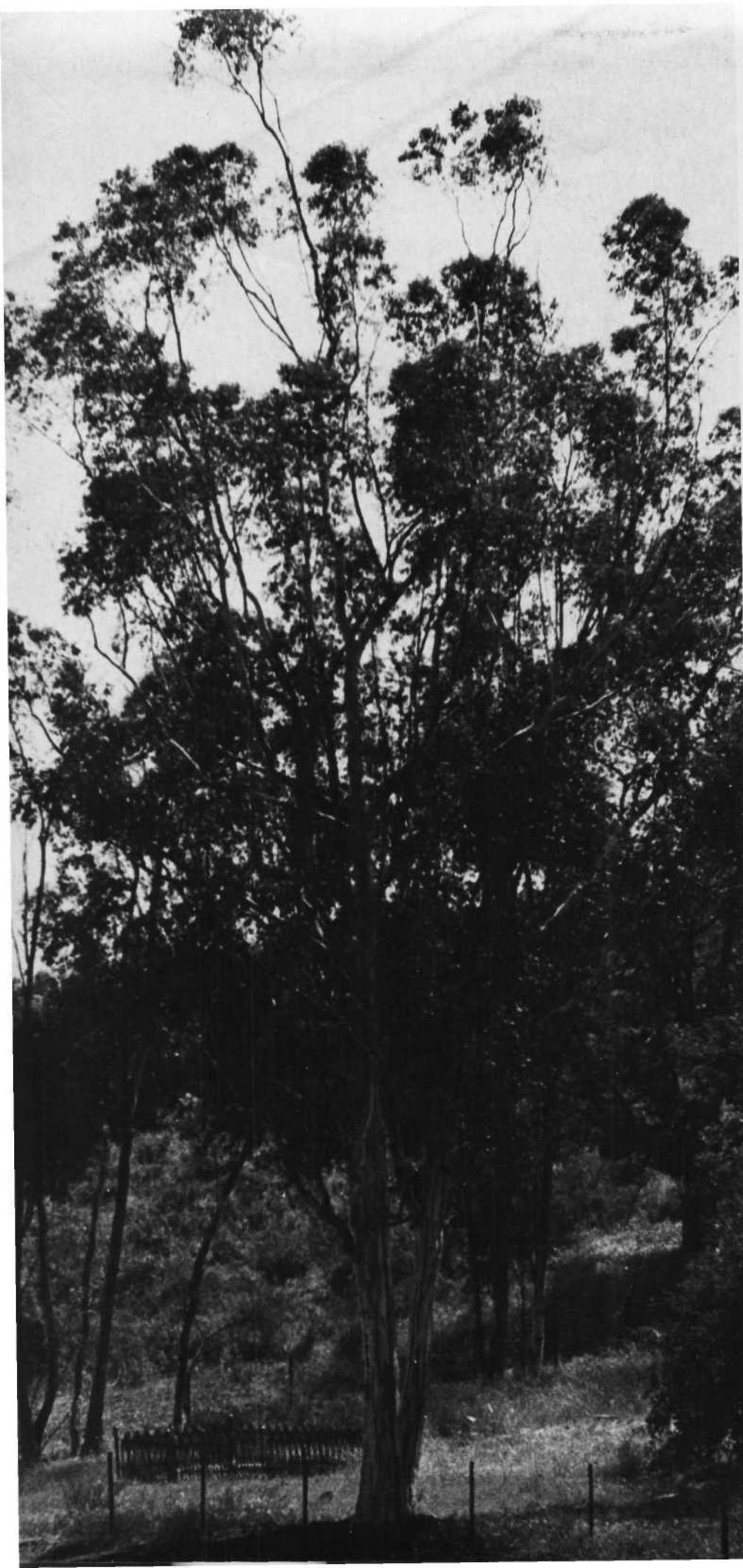
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IN A PASTORAL setting where cattle fat-ten peacefully beneath ancient oaks and elegant eucalyptus, only a few melting adobe walls remain to draw attention to the historic Ballena Valley and adjacent Witch Creek.

Now crossed by California State 78, this nearly deserted and little known area of San Diego County is midway between the historic towns of Ramona and Santa Ysabel. It once supported an agricultural community of nearly 400 people. Often huge piles of wool, sheep hides, gallons of honey and fresh picked apples from the nearby mountains, accumulated at the Witch Creek Stage Station which doubled as a saloon and hotel.

Between the roadside fruit stands, today's motorist, traveling the high country

Valley

by Mike Engle

of San Diego County, may enjoy vistas of rolling, grazing land and rock-studded hillsides. Only if he travels at a leisurely pace will he be able to enjoy the reminders of the past.

Nomadic Indians once inhabited Ballena Valley and Witch Creek. Excavations on a nearby hill have uncovered relics which included arrowheads and ollas. Metate rocks and food grinding implements have been found in abundance. These Indians, for reasons that can only be imagined, called the valley by the name of *Egepam*, which meant strange or foreign.

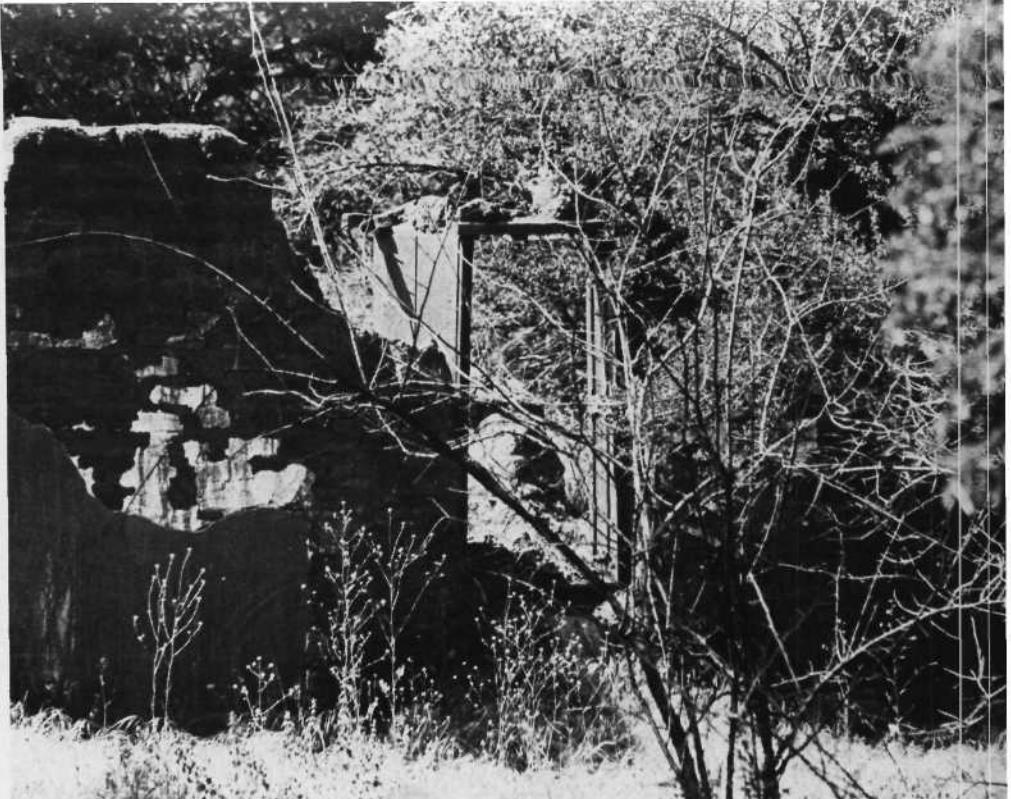
The earliest mention of *Egepam* by a white man appears in the diary of Father Jose Sanchez when he passed through the

Ballena's cemetery, with its earliest markers dating about 1870, is located beneath stately eucalyptus trees.

valley in 1821. In 1846, a quarter of a century later, on the day before the bloody battle of San Pasqual, General Stephen W. Kearny and his Army of the West met with reinforcements from San Diego "in or near" the valley of Ballena.

When and why the valley became known by its present Spanish title, which is pronounced *Bah-yah-nah* and means whale, is open for speculation. One story says the name originated when a whale's skull was discovered on Ballena Mountain. Another story is the name was chosen by an early Spaniard who noticed the resemblance between the predominant mountain and the body of a whale.

Two of the first white settlers in Ballena Valley were Sam Warnock and Joseph Swycaffer. After being mustered out



of the Whale

of the army in the early 1850s, Warnock and Swycaffer carried the U.S. military mail by mule and horseback between San Diego and Fort Yuma. Their lonely route took them through the high back country of the interior and across the arid sands of the Colorado Desert. The fresh cold springs and shady oaks of Ballena were always a welcome sight.

Warnock and Swycaffer gave up their mail pouches and settled in the valley. Here they built their cabins, planted their crops and tilled the rich soil. Later, it was these same two pioneers who built the area's first schoolhouse and established the first post office. When it opened in

1870, it was the only post office in the county beyond the limits of Old Town (San Diego). In one location or another, it continued to operate for more than a quarter of a century.

Portions of Sam Warnock's original adobe house later became Ballena's stage station and post office. In the 1860s or 1870s, Warnock traveled to Old Town and made arrangements to move a sturdy house into the valley. Piece by piece, the building was disassembled and hauled along the roadway that was little more

than a trail at the time. Days later, it was carefully reassembled at its new site where it is still used today.

Another early arrival was Bill Warnock, Sam's brother. In 1856 he and his bride arrived from their native Ireland. They immediately established a temporary shelter that was little more than a tule wigwam. With the bare ground serving for a floor, they planted four sturdy posts into the soil and then tied them together with willow poles. Smaller poles, stretched across this framework, formed the



Crumbling adobe walls (above) are all that remain of Witch Creek's stage station and hotel. A few early adobe buildings (right) are still used today.



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springs and slats of the temporary bed that was to last them nearly three years.

During the period this primitive hut served as a home, Bill Warnock built a three room adobe nearby. It was heavily constructed with walls that were three feet thick at the base and which tapered to two at the top. The roof was thatched with mud, straw and native brush. Not long after they were lodged securely in this new home, they watched silently as their former tule hut was levelled to forage grass by the onslaught of a wild rampaging bull.

Bill Warnock, just as his brother, was also a farmer. With the help of Indians in his employ, he harvested the rich crops of grain by primitive methods far different from those in use today. Baskets of hide were cut and shaped. At the time of harvesting, the grain was cut with knives and scythes. The Indians placed it in the hide baskets, each of which was so heavy two men were required to carry them. The baskets were stacked high and then hauled by oxen to the "tramping" grounds. These were fenced areas with hard packed dirt floors on which the grain was scattered about. Horses were turned loose into



the enclosure and allowed to thoroughly tramp out the grain. Later, after the horses were set free, the Indians removed the straw and raked the grain and chaff into mounds where it could be winnowed.

As the years passed, improved farming methods were brought to Ballena by the many new settlers who continued to arrive. The need of a schoolhouse soon became evident. Before it was built, an old man by the name of Stone had conducted open air classes under a lean-to ramada beside a huge oak. The first real schoolhouse was a temporary one room building. Later, a more permanent structure served for several years.

Maud Frary, one of Ballena's several school teachers, felt the tiny schoolhouse was not up to her accustomed standards. "The school was tiny, about 12 by 16 feet, and I had thirty-seven pupils there at one time, from four years old up to eighteen," she recalled. "There was no ceiling, and just rough boards. My desk was a carpenter's bench and I sat on a stool behind it. The children's benches were loose and got knocked over now and then, scattering books, papers and ink around."

In the 1880s, the area's last and most



Witch Creek's one-room school house was used from 1884 to 1954.

thatched with native tules which were held together by twisted leather thongs.

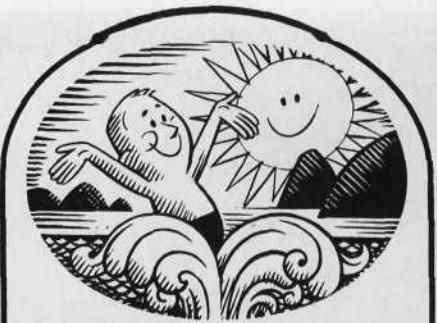
Shortly after the turn of the century, when the property had changed hands again, more refinements were added. Soon the hotel was catering to much of the social register of San Diego. Finally, in the mid 1900s, the building was razed and only the lumber was salvaged. Today, the last of its adobe walls crumble and melt into the landscape.

On a nearby slope, overlooking the peaceful valley, is a small fenced square of ground. Overgrown with weeds and sheltered by a stand of stately eucalyptus, a few markers and monuments pay silent tribute to many of the early settlers that once called Ballena Valley and Witch Creek their home.

A crumbling adobe or stray stone wall, a flowering oleander or long neglected garden are all that are left to mark the dreams of these stalwart pioneers. In a few years, perhaps these too, may have disappeared. □

permanent one room schoolhouse was built. In 1969, it was still standing adjacent to the highway in Witch Creek. It was one of the few remaining examples of the gingerbread architecture of this period. The doors were opened in 1884 to 11 students, some of whom traveled many miles on foot and horseback to attend the classes. For 70 years this picturesque schoolhouse remained in use. In 1954, when the diminishing number of children were transferred to the Julian elementary school, the doors were closed forever. Since that time, the building has been used for hay storage and as a target for vandals.

Another landmark building, parts of which may still be seen from the highway, was the Witch Creek Stage Station and saloon opened in the 1870s. Catering to the hundreds of men traveling between San Diego and the new gold mines of Julian City, business flourished. About 1891, it was sold. The new owners added a second story to accommodate overnight guests, and the area had its first hotel. It was a sturdy building of heavy timber and thick adobe walls. Below, the matched pine floors were held in place with square nails, while above, the roof was



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Champion at arid living...

THE CHUCKWALLA

BIG, BULKY and baggy, the Chuckwalla is no candidate for a beauty contest, even in lizarddom. His hide looks several sizes too large for him. Creased and wrinkled, it obviously needs pressing. He's potbellied, double-chinned and indolent, spending most of his time when not eating, loafing about on warm rocks and soaking up sunshine.

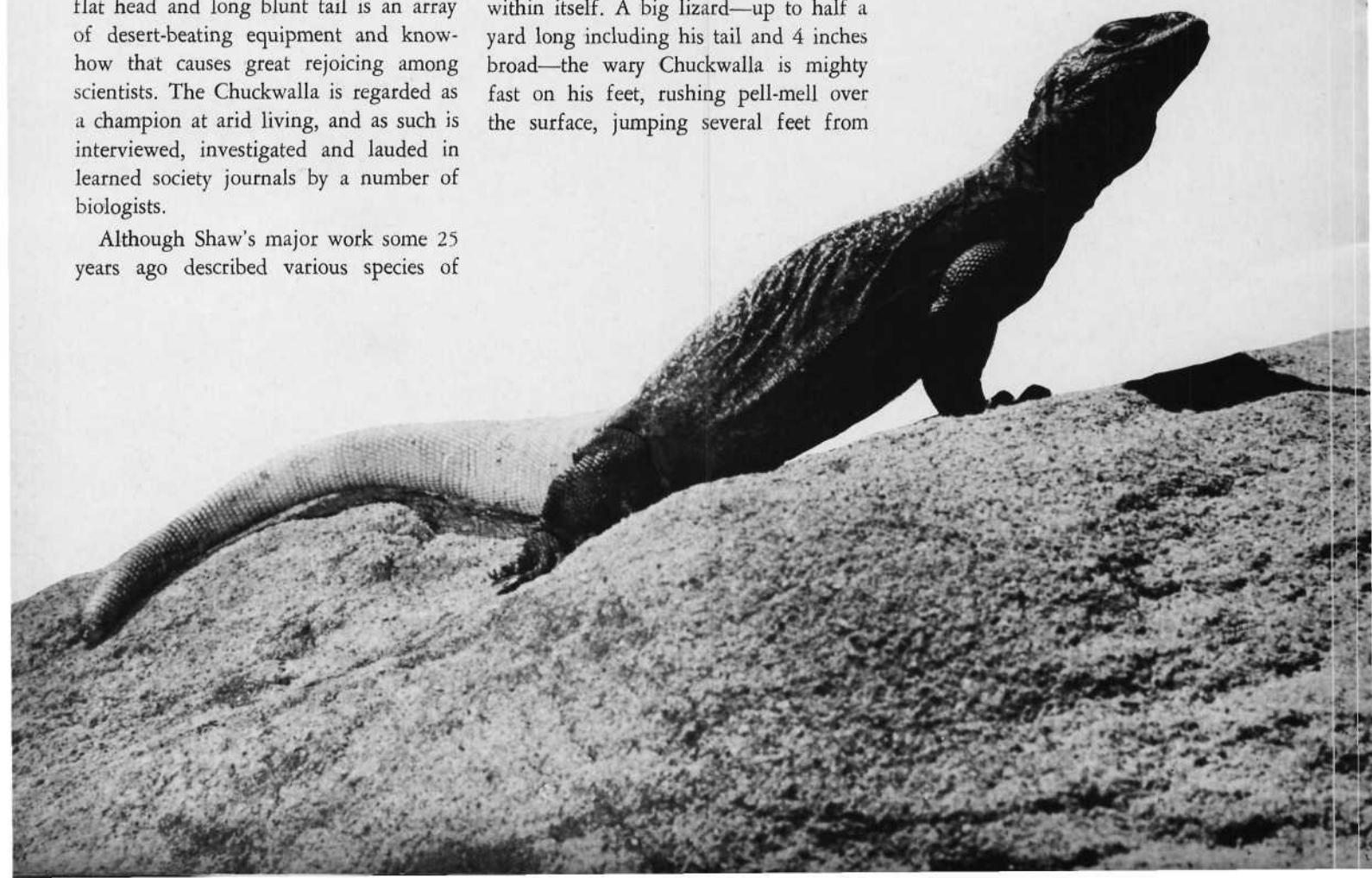
That's the way he looks on the outside. But inside this scaly sack with the broad flat head and long blunt tail is an array of desert-beating equipment and know-how that causes great rejoicing among scientists. The Chuckwalla is regarded as a champion at arid living, and as such is interviewed, investigated and lauded in learned society journals by a number of biologists.

Although Shaw's major work some 25 years ago described various species of

Chuckwallas to be found in the Southwest, almost nothing was known of their life history until Johnson's recent study conducted in the western Mojave desert—a region of deeply eroded canyons, cracked outcroppings of bedrock, large boulders and sand.

Determined to get the facts on the daily doings of these lizards, he outchased, outsmarted and finally caught a good number of them—no small feat within itself. A big lizard—up to half a yard long including his tail and 4 inches broad—the wary Chuckwalla is mighty fast on his feet, rushing pell-mell over the surface, jumping several feet from

rock to rock. Such tribal olympics were developed through thousands of years of keeping a snap ahead of hungry neighbors, it being well known by coyote, hawk, wildcat, owl, snake and man alike that these fat lizards taste good. Hence the tribal proclivity too, for taking up residence in rocky terrains wherein crevices are everywhere handy for hasty retreats.



by K. L. Boynton

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Diving into a crack headfirst, the Chuckwalla presents only a view of his tail, which, unlike that of most desert lizards, is exceedingly tough and hard to break off. Furthermore, he promptly wedges himself securely in by literally pumping himself up with air, increasing the volume of his lungs by some 300 percent, over half the size of his body. He hangs on with his toenails, directs his body scales outward, pushes his back and belly up against the rocky crack, and puts his mind on staying there.

Finally rounding up the number he thought he needed, Johnson took their temperatures, and also recorded other data on sex, size and what not. Before he let them go, he marked each one differently with a paint spot for quick visual identification. Then, with spotting scope and binoculars, he began to watch them as they went about their daily business in their native haunts.

The Chuckwalla, it seems, is a late riser, coming out of the crevice where he spent the night only when the sun is well up. Sitting on a rock, he warms up for activity. His color is at first dark to absorb light (and heat); then it begins to pale as his temperature rises. Ready for action, he strolls off for breakfast, moving through his home range—some 350 by 125 feet. Male ranges never overlap, but it seems that the females are not so fussy about boundary lines. Their smaller home ranges often extend a bit into neighboring male territories. This trespassing seems to be all right with everybody, and results in increased breeding chances, a matter of some importance to the species since not all mature females produce clutches of eggs every year.

Breakfast consists of leaves, buds, fruits, flowers—the yellow blossoms of the brittlebush being particularly favored. The Chuckwalla also eats indigo bush, desert mallow, creosote bush, desert tea,

burro weed, incense bush. Being vegetarian has its advantages since plant food doesn't have to be chased and caught. But because the Chuckwalla's diet is so heavy in plants growing on alkali soil, he takes aboard a very heavy load of salt with each meal—a load that by all rights should be fatal.

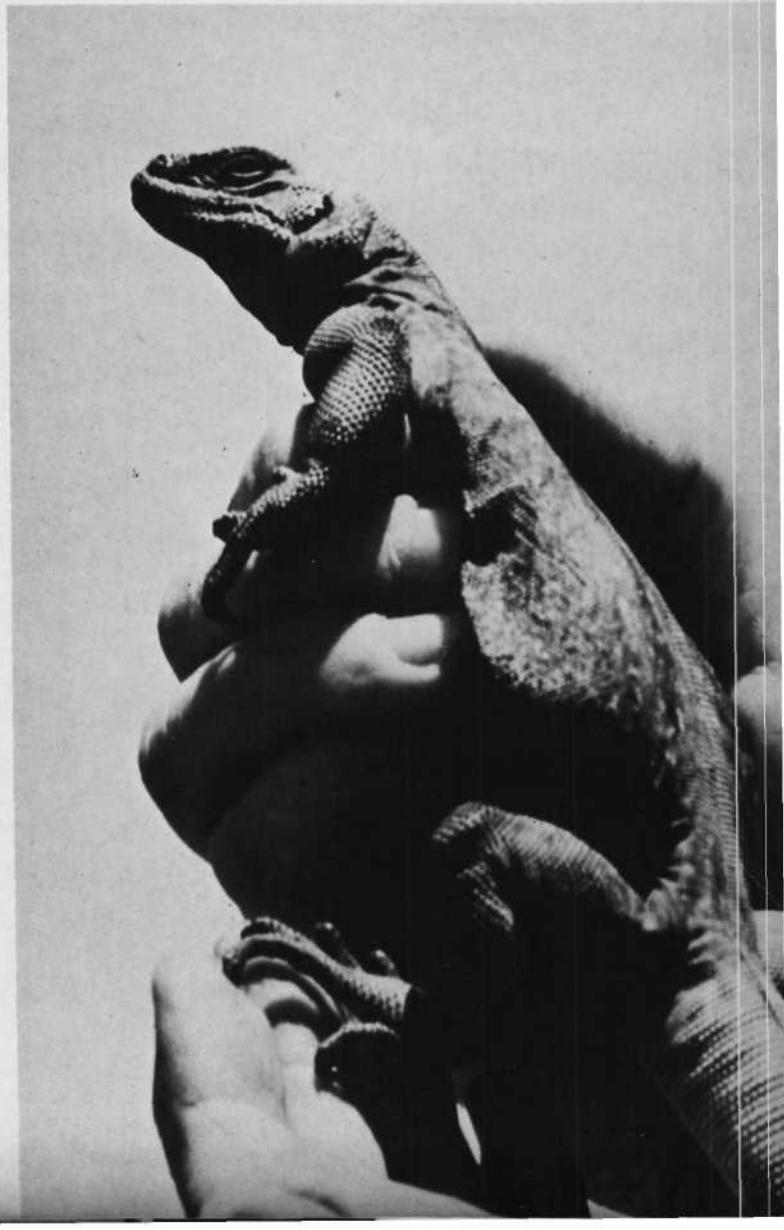
Yet the lizard thrives and it took the work of physiologists Norris and Dawson to show why. It seems that up in each of the nasal passages of this lizard is a bean-shaped gland connecting to ducts that run forward to pool just inside the nostrils. Collecting fluids is expelled by sneezing, encrustations of alkaline salts being frequently seen on the snouts of these lizards.

Marine birds and reptiles have similarly functioning glands that remove excess salt they take in from the sea. The Chuckwalla's also carries away excess potassium, a very important plus, since it enables the lizard to eat and secure water from the

iodine bush and other potassium rich plants. Acting as a kind of auxiliary kidney, these glands are probably essential to the survival of the Chuckwalla in his alkali desert.

Being a vegetarian also has its disadvantages in another way, for as Johnson found in his study, this big lizard with his need for an ample food supply each day, can be active only when the plants have sufficient moisture to grow. In the western Mojave, maximum food is available only during the spring and early summer, and since the lizard doesn't come out of his winter hibernation until at least March 20, this leaves only about four to five months for him to be in circulation. During this time he must do his growing. Stuffing himself, he rapidly puts on flesh, his tail and legs firming up. Moreover, as a real heat beater, he can maintain activity above ground at air temperatures of as much as 102 degrees, squatting unconcernedly on rocks too

Although this chuckwalla appears tame, they are exceedingly hard to catch and should be left in their own natural habitat.



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hot for a human hand. Feeding, he moves in and out of shady areas for temporary cooling. Further, he has excellent panting ability, employed when the day's temperature is soaring, and thus cooling himself extends the time he can be out foraging.

Water loss, always dangerous in the desert, hits the Chuckwalla, too. Even at his preferred body temperature of 104 degrees, about half his water loss is through his skin, probably at the hinge areas between his scales. But here again the champion has an answer. Under all that flappy, saggy, baggy hide along his

sides from belly to head region there are accessory lymph spaces, normally half full of fluid. After rains or at the end of the growing season, these sacks are full. With a supply of body water aboard like this, the Chuckwalla is more than ever set to cope with desert conditions.

He must also take care of his social engagements during the short spring and early summer period of plant abundance. Apparently there is little fighting among the males; the large one in any encounter dominating by sheer size. The ladies select holes in the bedrock containing sand with an eastern exposure to catch the first morning sun for egg sites. Scratching the sand aside, the female deposits about four eggs, covering them again. The gal observed by Johnson returned a few days later to cover them further, and as his tests showed, the temperature was indeed warmer in holes with sand than those exposed and bare. While he observed no parental care, he did find one female under a rock with two young, perhaps only there on tolerance.

In spite of egg loss to predators, and individuals subtracted from society as tasty morsels at various stages of growth, the Chuckwallas keep a fairly stable number, about seven lizards per two-and-one-half acres, and the sexes about evenly matched. With good luck, and keeping a sharp lookout, this lizard may make it to six years.

By August in the western Mojave, all activity in Chuckwalla circles ceases, for there is no water, no growing plants, no food, and therefore no lizards on the scene. Tucked deep down in a bedrock crevice, the Chuckwalla enters a period of dry weather dormancy, which may last so long that he may coast right into his winter hibernation period. He lives on his body reserves stored in his tail and legs, and avoids dehydration with his water tanks aboard. Barely alive, his body is so slowed down that the reserves last and last.

His time out of circulation matches that of the plants he eats, for they, too, are going through a similar period of dormancy awaiting the rains when times of plenty can come again. Emerging finally from winter hibernation, the Chuckwalla, scrawny of legs and tail, looking baggier than ever, is ready to dine with gusto. □

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Petroglyphs from Glen Canyon (on the Utah-Arizona Border), now covered by the waters of Lake Powell, were unusual in that many had six-fingered hands.

FROM THE lowest California desert to the top of the Colorado Rockies, the old West is spotted with the graffiti and doodlings of its first inhabitants. Whether they're pictographs, (crude paintings done in mineral pigments and grease) or petroglyphs, (fanciful carvings incised into the rocks) they've been of interest to western travelers for hundreds of years.

For today's adventurer who likes to view the past through the lens of his camera, these ancient pictures can be one of the most difficult subjects to photograph. Often what shows so sharp and clear in the viewfinder will turn out to be a dull, washed-out print, lacking contrast and too indistinct to be of interest. What happened?

To get a good print the photographer must keep in mind the camera records on a flat, two-dimensional surface (the film) a view that contains objects at varying distances from his lens. Therefore, depth—the relation of one part of the picture to another—can only be shown by contrast or changes in the color tone.

While a professional can guarantee a good picture nearly every time, he uses some mighty expensive equipment. He'll have a tripod for long exposures, several highly-polished metal reflectors to place the light exactly where it is needed, and perhaps an electronic flash with a long extension. These things are all nice but not necessary. Good prints can be made with a box camera. For the amateur, the

important things to consider are film and filters.

Most people think of a filter as being a little piece of colored glass which in some magical way brings out the clouds in their black and white pictures. True enough, but a filter, if properly used, can also either darken or lighten any object. For example, if you want a red stick figure to stand out against its background, use a red filter. This will make the wall appear darker while the pigment will show up almost white.

In choosing a film the amateur is faced with rows of brightly colored boxes, each containing a film for a certain purpose. Sales clerks talk knowingly of such things as emulsion contrast, speed, latitude, resolving power, sensitivity and a host of others, all intending to confuse. Forget them. Use any film you're personally acquainted with. Just remember, the *slower* a film, that is the lower the ASA number which is always printed on the box with the directions packed with each roll, the more light you'll need on your subject. The *faster* the film, the higher the number, the less light needed.

While color offers an accuracy that can be had in no other way, most magazine reproductions call for black and white. Good prints can sometimes be made from color slides, but be selective in your choice. Too often a scene which shows clearly because of the colors themselves, will in black and white be nothing more than shades of gray on gray.

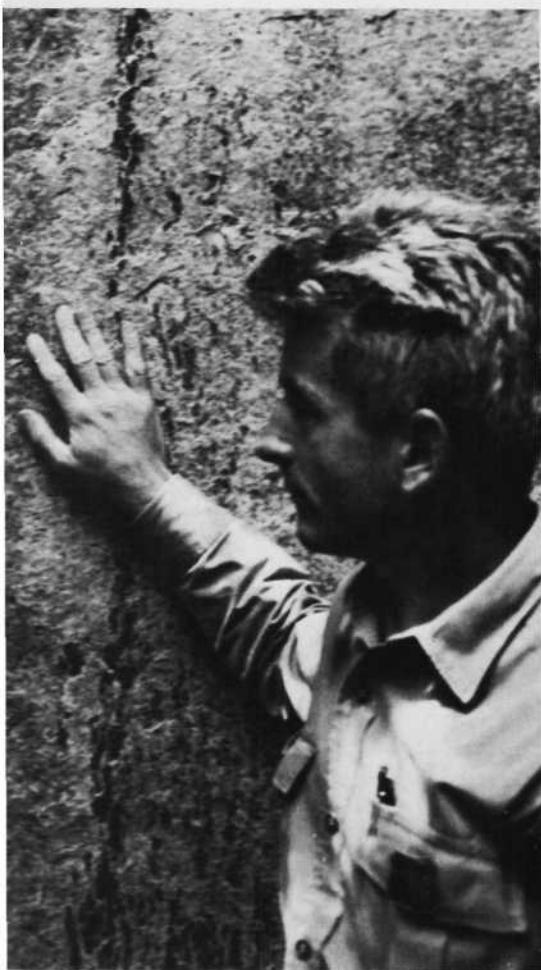


There are two types of aboriginal pictures; pictographs and petroglyphs. Both pose a problem in that they're usually found in poorly lighted places, but here the similarity ends.

Petroglyphs, which are sometimes little more than faint scratchings on a rock are best brought out by side-lighting, placing a light close to the plane of the picture, but out of range of the camera, so as to form shadows in the grooves. Since not everyone carries a flash equipped with a

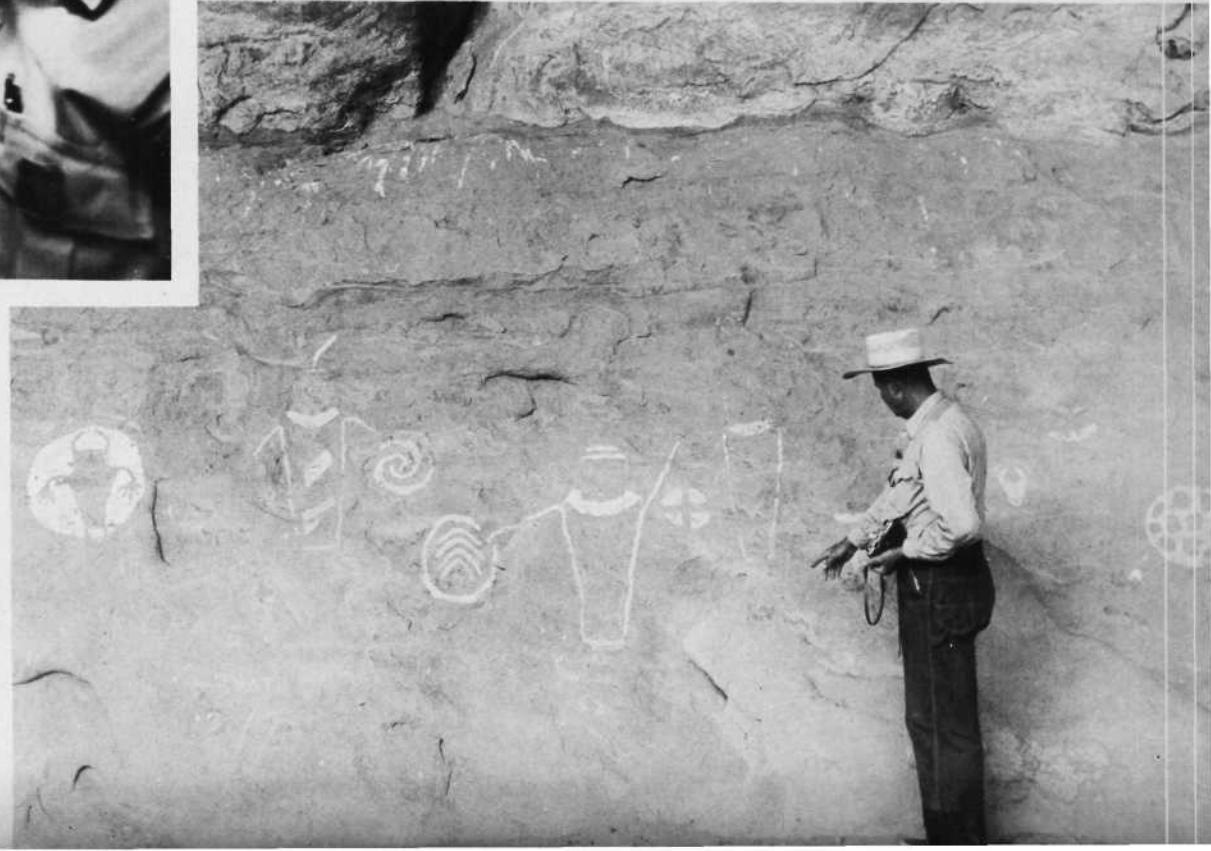
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PICTOGRAPHS, PETROGLYPHS and PHOTOGRAPHY



Almost obliterated by rain water, the pictographs (above) in the California Sierras were of red mineral pigment outlined in white. Fine pictographs (right) near Escalante, Utah, have been marred by vandals who can be prosecuted under Federal statutes.

by William Klette



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long extension cord in their gadget bag, a light source of a sort can often be improvised by using a sheet of white paper or a piece of cooking foil to act as a reflector.

Another way to bring out the grooves is with chalk, the common schoolroom kind that contains no grit. If you use chalk, ALWAYS wash it off after taking your pictures so the petroglyphs are left as you found them. Perfectionists object that photographs made this way are not accurate as they are pictures of the chalking and not of the carvings.

Pictographs should NEVER be chalked. The pigment is usually sufficient to carry the contrast and the chalk could cause the paint to flake. Paintings are best photographed in open shade as direct

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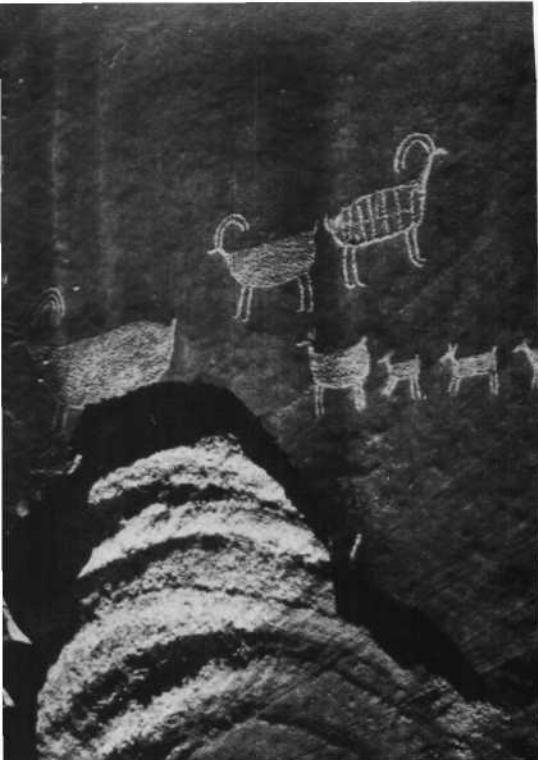
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Photograph illustrates how detail is lost when a 35mm color transparency is converted to black and white. Break in wall was caused by vandals removing petroglyphs.

found covered over with desert varnish or thin deposits of travertine. They are probably the oldest existing art form in our country, usually unknown to everyone but a few archeologists, prospectors and rockhounds. No matter their origin or their purpose, they offer a fascination and a challenge to the photographer. □

sunlight will tend to wash out the color. A flash is of some help, but bounce the light so as not to cause a glare.

One final thing, always put something in the picture for scale even if it is only your old hat. Although a few archeologists frown upon using people, I've found that a person makes a much more interesting composition than a 12-inch ruler.

Other than weathering, the only enemy of these pictures is man. Not only do many of the symbols make attractive targets for any idiot with a rifle, but the flat walls make perfect bulletin boards for anyone with a knife, a sharp stick, or a can of pressurized paint. Today, too many of the old sites look like the walls of a men's restroom, completely covered with initials, obscenities, and in a few cases the expressions of some religious fanatic.

There are laws, but unfortunately they are woefully outdated and incomplete. Most state codes are based on the Federal Antiquity Act of 1906, which provides primarily for the collection and preservation of items located on public property. California's Penal Code makes it a misdemeanor to deface or destroy anything of historical or archeological value anywhere.

Just who made these pictures and why is still a mystery, and most living Indians deny all knowledge of their origin. Though the rate of weathering shows some are fairly recent, a few have been

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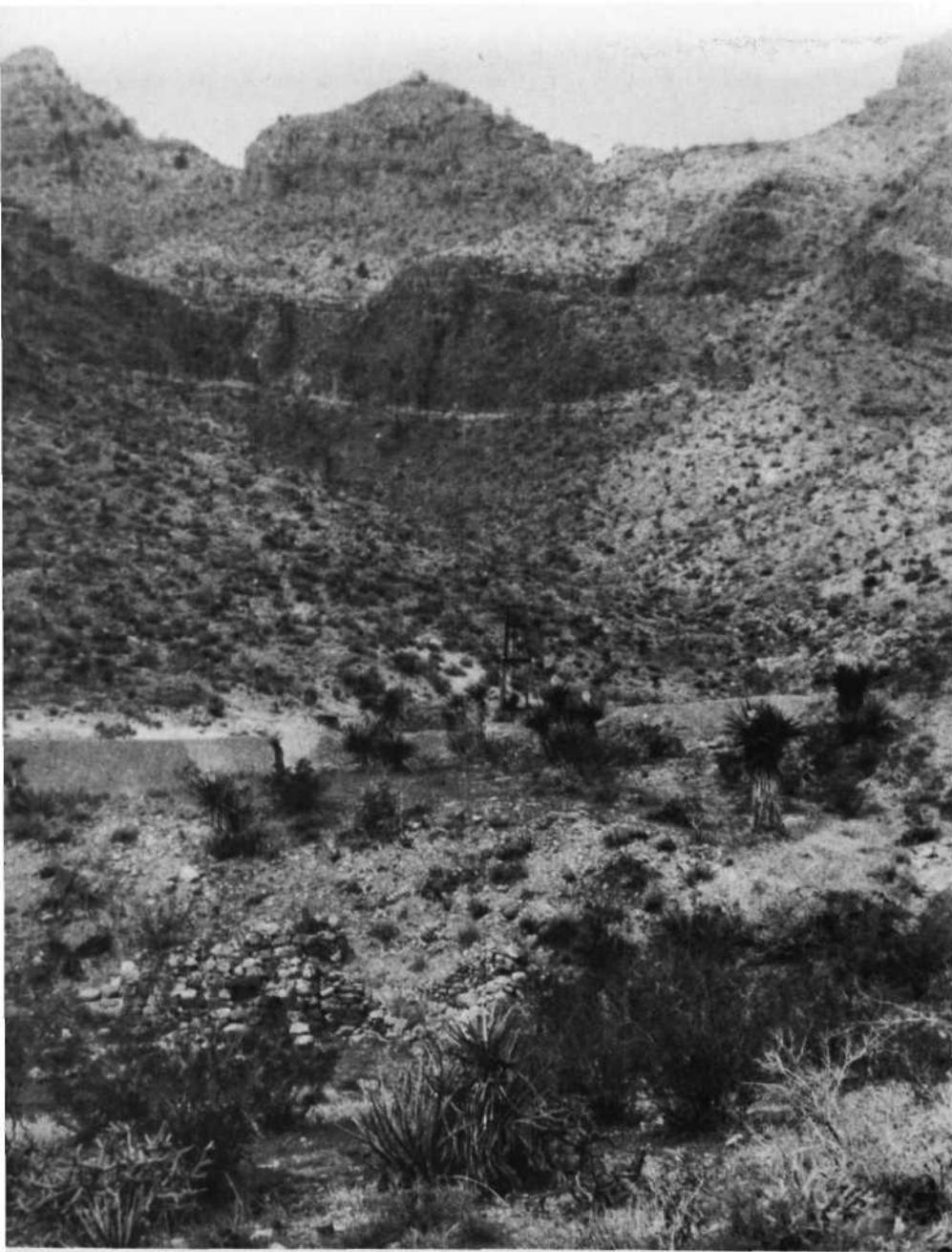
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Headframes of the Silver King Mine (above) are seen behind the large tailings. One of Providence's well-constructed and unusually ornate buildings still stands.

White Ghost of the Mountains

by B. W. Browne

PERCHED BENEATH the soaring gray peaks of Southern California's Providence Mountains stands one of the most unusual and best preserved of the old mining towns in the eastern Mojave Desert. Unlike many ghost towns, which are no more than a few foundations, Providence contains some well preserved buildings of white softstone, as well as many half-ruined walls and frame dwellings.

The weathered dirt streets and grease-wood gullies are strewn with fragments of bottles from late Victorian times.

Beyond the town's rugged, desolate hillside, the old wagon road to Fenner crawls across the vast sweep of Clipper Valley. Clinging to the steep slope behind Providence is the source of that precious cargo which sent the wagons groaning across those dusty miles, the Bonanza King Mine. Discovered in the 1870s, and in full production during the eighties, the mine is said to have produced nearly one million dollars during an 18-month period. Today the ruins of its offices, headframes and hoists are scattered across the face of its monumental tailings.

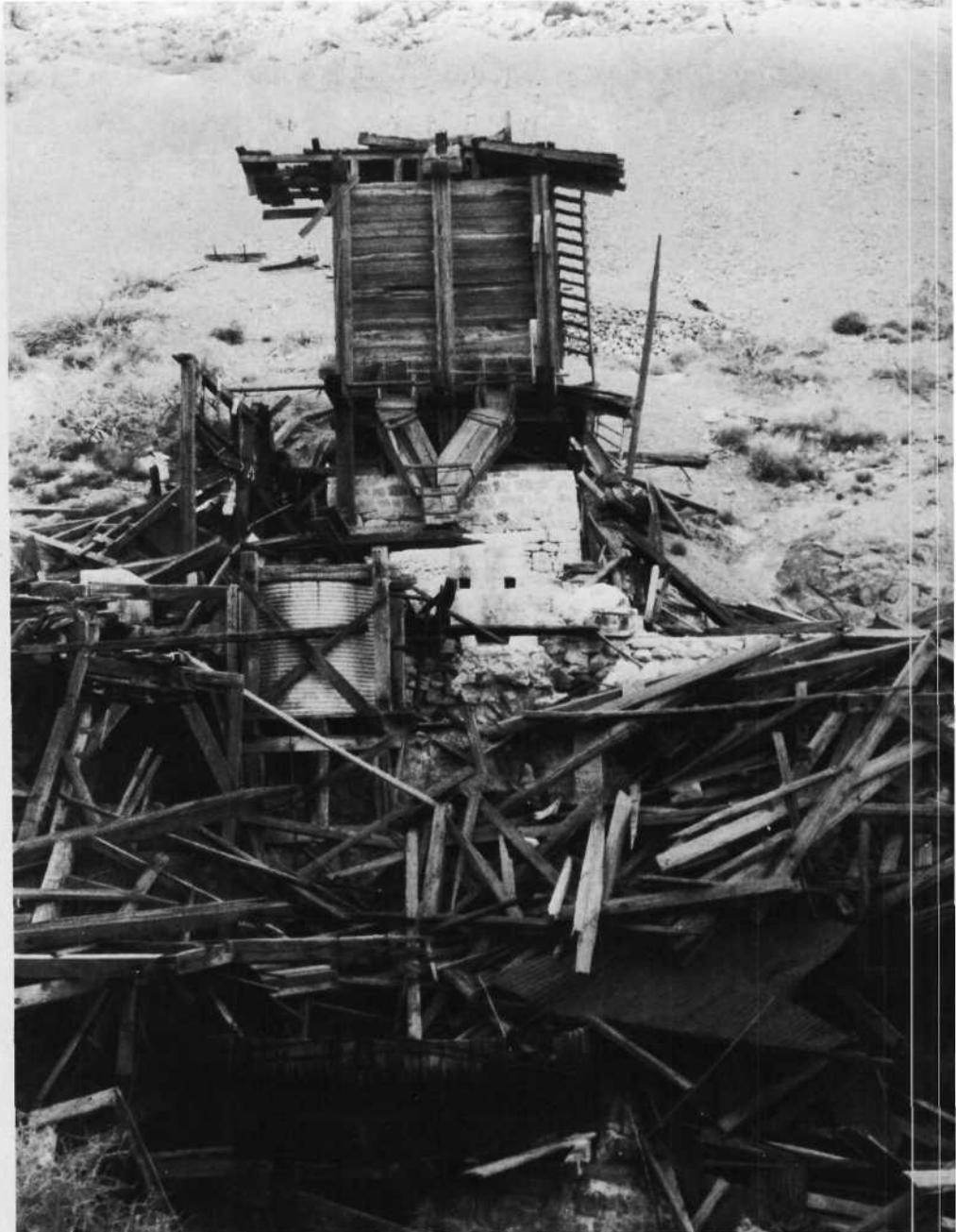


Serving as a company town for the miners, teamsters, engineers and owners of the Bonanza King, Providence also served as a commercial center for many of the other mines lying among the lonely mountain peaks. Nearest of these was the Silver King Mine, about one mile to the north. Here, in a wide valley thick with cholla and barrel cactus, tall headframes and gray tailings mark the sites of other vanished fortunes.

Along the edge of this rough gully stand the broken white walls of more small buildings. Nearby, the ground is littered with rusting square-nails of all sizes and an intriguing scatter of sun-colored glass.

This dead-end valley provides one of the many good campsites in the area. Looming above it on one side are great limestone pinnacles, with large cave openings showing among them. On the other side, sandstone cliffs are riddled with caves of all sizes. Lumps of limestone rock lie all about, like frozen gray mud.

Providence's mines and the countryside around them provide an area of inexhaustible interest for every known species of four-wheeled desert rat. The surround-



Massive ruins of the Bonanza King's ore-shoot, stamp mill and settling tank cling to mountain slope behind Providence. Crumbling stone walls are in background.

ing valleys and mountains are rich in history and archeology. Seven miles south is Mitchell Caverns. To the north runs the old Government Road west of Fort Piute, with its water holes and stone redoubts. (Desert, Nov. '68.)

Providence is roughly two hours from Barstow, and one hour from Needles. From Barstow, go east on US 66 to Essex. Then turn northwest on Essex Road for 17.3 miles, at least ten miles is paved, the rest, graded dirt. At Black Canyon Road, fork left towards Mitchell Caverns for .08 miles. Here, fork right on the graded road marked "7 IL Ranch," and follow 5.2 miles (beyond this point the road is ungraded). One mile straight ahead are the windmill and tank of the Bonanza

King Well, and one mile north of the well is the Silver King Mine.

To reach Providence, turn left instead of going on to the windmill. Then (the only bad spot on the entire route), the road dips into a shallow but rough gully, and then up a small hillside of rocky, soft soil. At the top of this hill turn right, and the white walls of Providence are visible about one mile further up the sloping road.

Whether prowling through the buildings of Providence, exploring the ruins of the Bonanza and Silver King mines, or watching your campfire flicker under silent moonlit cliffs, a visit to the white-walled ghost of the Providence Mountains is a trip you will long remember. □



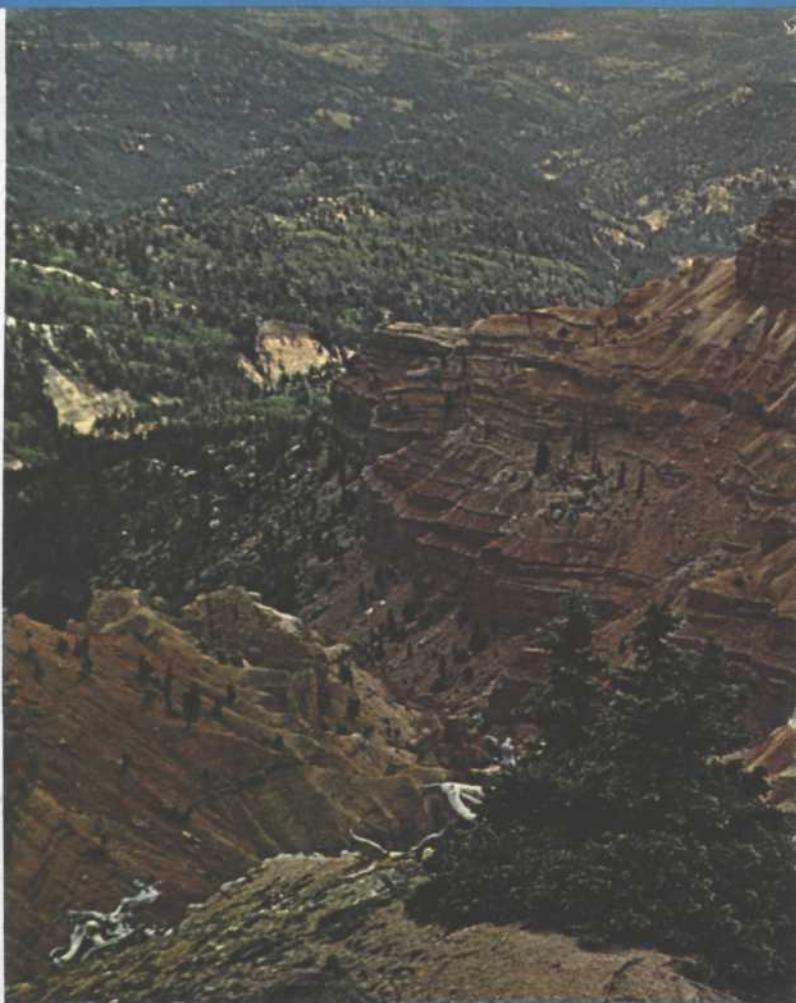
Shakespeare in the

by Carol-Ann Fuller

During the evenings under the clear Utah summer skies you can watch "The Tempest" and other plays by the Bard of Avon presented on an exact replica of an Elizabethan stage. Your days can be spent visiting the nearby national parks and monuments or exploring ghost towns and following Indian trails around Cedar City.

DEEP IN THE heart of Southern Utah stirs the ghost of Shakespeare! Magnificent canyons and pinnacles of timeworn sandstone guard the grounds where each night for three weeks ambitious thespians speak the famous words of England's famous bard.

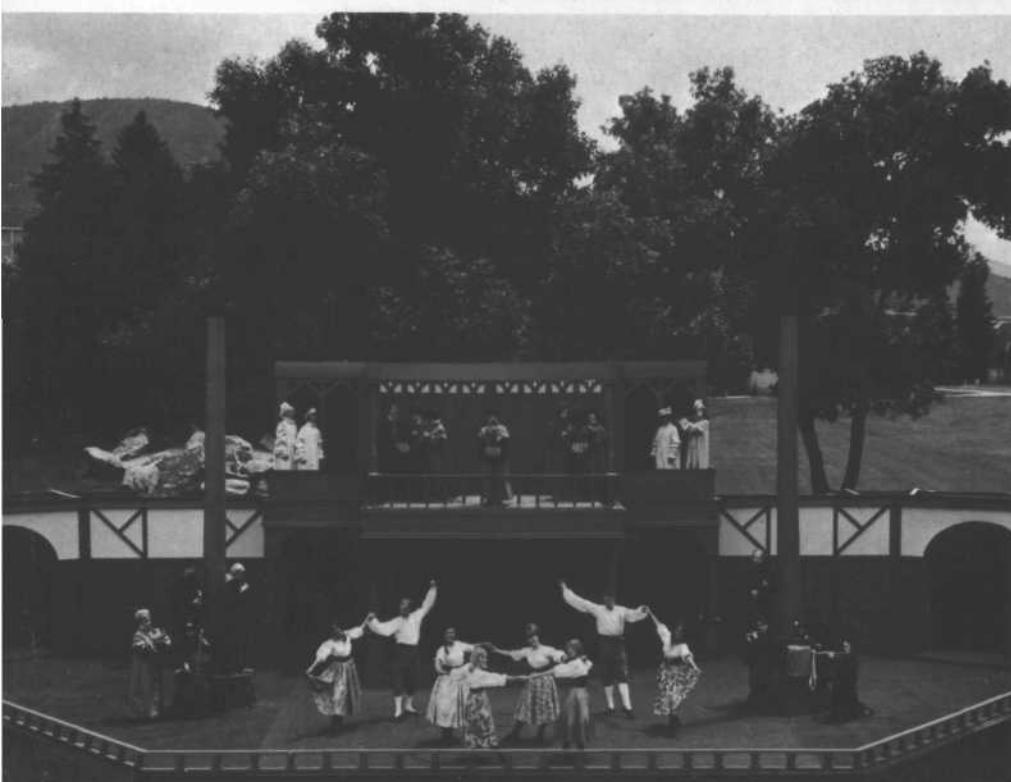
Beneath the stars on warm summer evenings, Cedar City hosts the Utah Shakespearean Festival on a replica of an Elizabethan stage. As you walk through the auditorium doors on



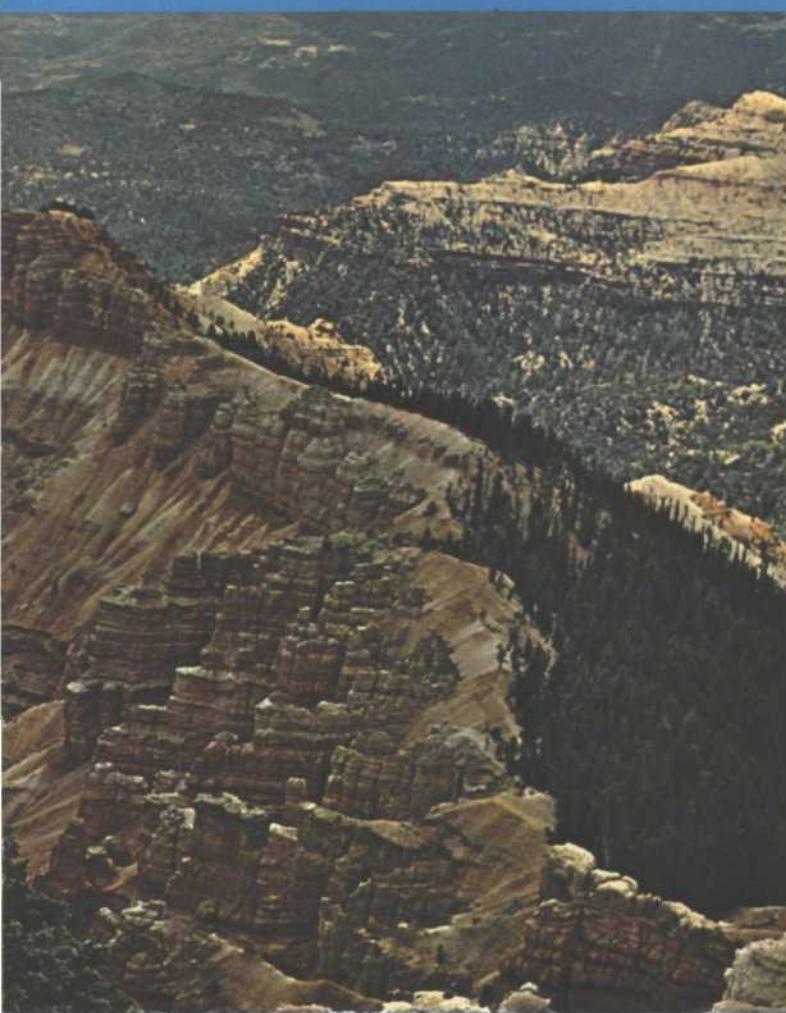
the campus of Southern Utah State College, you leave today's world and enter the world of early England.

The stage, set amid the cool, green pines, is an authentic reproduction. Shakespeare himself referred to the Elizabethan theater as "this wooden O." To us, as modern playgoers, it more resembles a small stadium rather than a theater. The bare but basic stage commands the center of attention. Arranged in a semi-circle on graduated risers are seats for the audience. Even though the nights are balmy, bring a wrap as the mountain air often cools when the sun sets.

Before the play you can wander through the yards and enjoy the early English customs geared to set the stage for the evening's performance. Dancing on the green and winding the Maypole is performed by a group of sprightly, light-



ah's Color Country



Color photo by Max R. Bonzo, Cedar City

Cedar Breaks
National Monument (left) is one of many colorful areas near Cedar City. Thespians stage a daytime dress rehearsal (opposite page) on the authentic Elizabethan stage. Before the evening performances, players (below) set the mood on the picturesque campus of Southern Utah State College.

winds and strings provide simon-pure background music. Mother Nature dims the lights as the sun sets. The technicians turn on spotlights and colored lights. Trumpets herald the entry of the players.

Props and scenery are minimal but the costuming is elaborate. Swift scene changes are accented with vigorous speech and gestures. The action is kept moving. The rich language of Shakespeare, so often a challenge to a reader, is transferred to musical phrases by well-rehearsed performers. The plot unfolds smoothly and carries you along with ease.

Utah's first Elizabethan theater opens its tenth season this July. Professor Fred Adams, drama director of Southern Utah State, is founder of the Utah Shakespearean Festival. Out of 400 applications of non-professional drama students from graduate school across the nation, 20 are chosen for the repertory casting each summer. Every one of these skilled performers have a chance to participate in two of the three productions and many appear in all three.

Continued

footed, smiling damsels. Madrigal singers wander leisurely through the group rendering the same songs sung by the madrigals in early England. Tarts and tasties are peddled through the crowd by fair maidens.

Children love the Punch and Judy show. They squeal with delight or weep real tears as the little puppets perform their antics and tell their story. Baby sitting services are available. A group of ladies come each evening and for a nominal fee you may register your children with them. Let the young enjoy an hour of pre-play activities with you and then check them into the nursery before the performance begins. The ladies have stories, games and cribs set up in the room adjoining your outside location.

Now is the time to enjoy the heart of the Festival! An orchestration of wood-



For four weeks prior to production, the students memorize, rehearse and dedicate their lives to Shakespeare. An hour a day is spent in movement, learning to walk, sit and stand effectively. These exercises are in addition to all other rehearsal sessions. Guest directors and producers give the cast a variety of learning experiences in capsule form.

The 1971 season of the Utah Shakespearean Festival will be July 15 through August 7. Plans are under way for the production of "The Taming of the Shrew," "King Henry IV, Part 1" and "The Tempest." It is suggested reservations for motels and tickets (\$2.50 for adults and \$1.50 for students) be made in advance. The seating capacity of the Elizabethan Theater is 600 and they play to a capacity audience each evening. The plays are produced in daily rotation. Tickets and information are available from the Festival Box Office, Southern Utah State Campus, Cedar City, Utah 84720, or call (801) 856-9061.

To get a full measure of the Festival it is suggested planning to attend each evening for three nights. During the day there are a number of loop trips that are full of interesting sights and activities.

Even older than Shakespeare are the Bristlecone Pine trees. They range in age up to 4,000 years. One of the world's largest forests of this rare and fascinating tree is located on the north and north-

west edges of Cedar Breaks National Monument. The gnarled, prehistoric trees grow in small stands on relatively poor limestone. The oldest Bristlecone Pine at Cedar Breaks is about 1,600 years old. Trail hikes may be taken to observe these ancients at closer range.

The area is rich in Indian and pioneer history. Just a quarter mile southeast of Cedar City is Squaw Cave. Legend says this is an historic spot where a Paiute Indian maiden committed suicide to escape capture by the Spanish during the Indian slave trade along the old Spanish Trail. There are Indian petroglyphs in several locations in the vicinity. One of the best findings is located at Parowan Gap one-and-one-half miles southwest of the city.

Twenty miles west of Cedar City are the ruins of Old Iron Town. The first pioneers came here to produce iron. Kilns and part of the buildings still stand as evidence of their early attempts at iron making. This was the site of the first foundry built and operated west of the Mississippi River. The early blast furnaces were conical-shaped structures of rock and/or brick, rising to towering heights of 15-18 feet.

The U.S. Steel Company's open, gaping pits of their modern mines are just a short distance from the original workings. Iron County, being one of the West's leading producers of iron ore, ships to steel plants in Colorado and Utah.

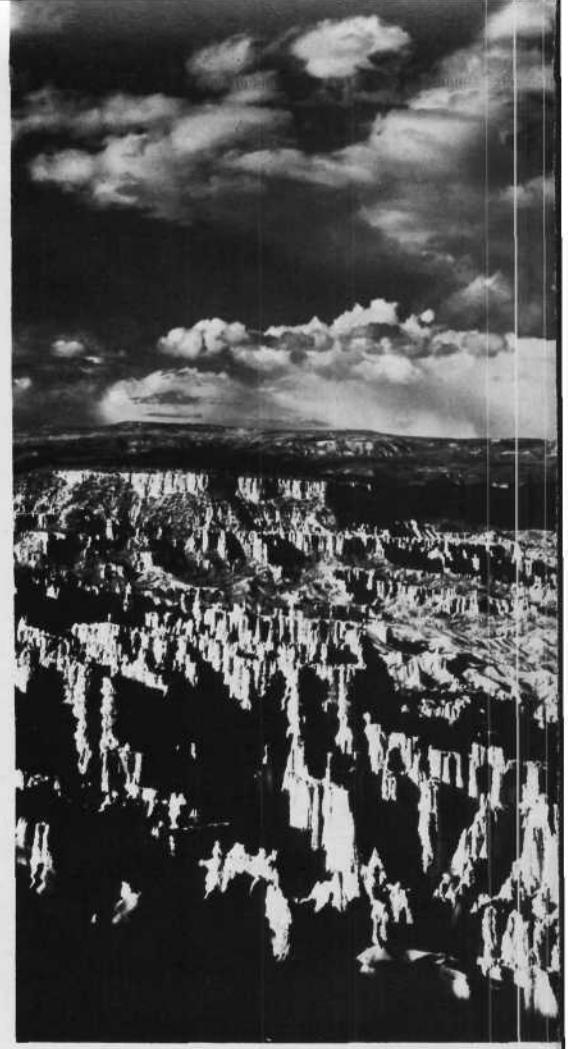


Photo by John Blackford



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Photo by Hal Rumel



The vermilion cliffs (left) of Bryce Canyon are contrasted against the blue sky and white clouds. On the Alpine Loop Drive, an aspen grove surrounds a clear pool.

In addition to these historic sites there are fishing holes, hiking trails, camping sites and museums. Prices of food and lodgings are reasonable. Contact the Forest Service or Chamber of Commerce in Cedar City, Utah for detailed maps and information.

Beyond the periphery of the loop trips is a world of unique color grandeur found in Southern Utah parks. Zion and Bryce National Parks and Cedar Breaks National Monument are closely grouped and connected by surfaced highways. A drive through them is a continuous panorama of extravagant color splashed with

abandon on a gigantic mural.

Cedar Breaks National Monument is a gigantic amphitheater covering nearly 10 square miles. The multi-colored hues of reds, oranges, yellows and purples chisel across the western edge of the rolling green meadows atop the high country of Southern Utah, cutting irregular chasms deep into the earth. Rain, snow, ice and wind have eroded the soft limestone into millions of fantastic shapes.

The name "Cedar Breaks" comes from an early settler's term and an erroneous nomenclature. The juniper growing near the base of the cliffs were mistakenly called cedar. "Breaks" was a common term for badlands which is fitting for the area—thus we have Cedar Breaks, which could just as easily have been "Juniper Badlands."

continued on page 37

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Headframe and cabin mark the site (above) of lonely Hannapah. Only collapsing buildings (right) mark locations of many of Nevada's ghost towns.

IN THE immediate environs of Tonopah are a number of old mining camps which have made their smaller but important contributions to Nevada's fame as the Silver State. Now of ghost town status—and in some cases only a wide spot in the road—they offer the visitor a glimpse into the life-style of early day mining camps.

Life was a far cry from that portrayed by movies and glamorized on television. The rough, barren exterior of a prospector's cabin did not change, upon entering, to flower-papered walls, white, ruffled curtains at the windows, hooked rugs on the floor and a cloth-covered dining room table. Even the smallest comforts—a regular bed, chair and stove—were scarce.

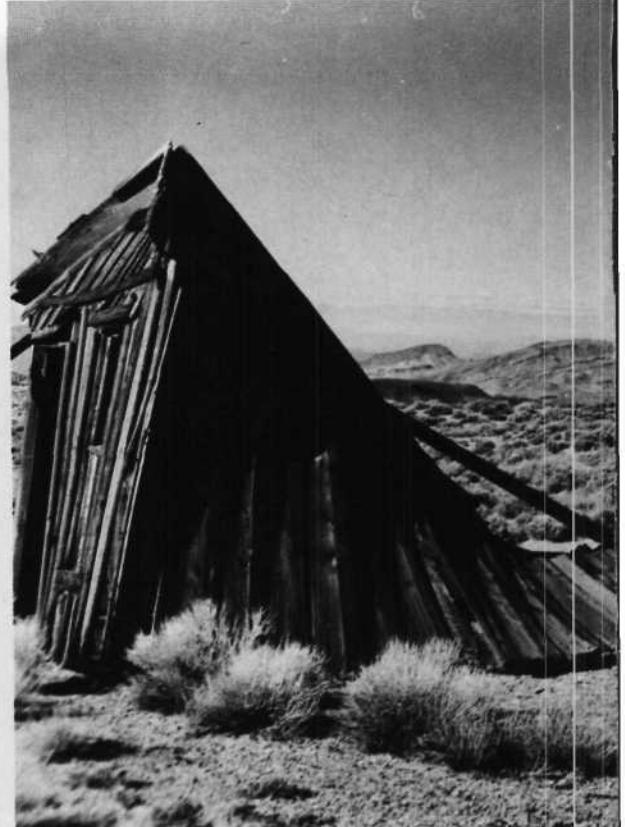
Since most of the camps were dry, all water had to be hauled from a considerable distance. This was true of all items needed to keep alive and work the claims

during the first crucial weeks or months. The prospector planned carefully to make do with the items he could pack in on his initial trip. The enterprising peddlers of the day could be counted on to show up with a wagon load of miscellaneous supplies. The buyer could also count on paying "sky-high" prices.

The first business to set up shop usually was a saloon consisting of a tent with a board between two barrels serving as a bar. You took your beer warm and your "likker" straight. Gamblers, promoters and harlots swarmed to the new bonanzas and the tradesmen brought up the rear.

There was sweltering heat in summer and winter brought howling winds and frigid temperatures. Tempers flared easily and violence often followed. Wives were scarce in a new diggings. It was a man's world and they were welcome to it.

When a strike lasted through the first hectic months and still showed promise,



NEVADA

Desert Magazine's Field Trip Editor explores interesting ghost towns around Tonopah, Nevada by passenger car.

families started arriving. Permanent buildings were erected and a semblance of social order maintained. Even so, life in the smaller camps was one of hard work under primitive conditions.

Five of the many old mining camps—Gilbert, Millers, Hannapah, Divide and Klondike—lie within easy exploring distance of Tonopah. Let's start the ghost town tour at Gilbert, located 30 miles northwest in the Monte Cristo Range.

Gilbert, the "baby" of the ghostly five, rose to prominence in 1924, when long-time prospectors Logan and Fred Gilbert hit a rich gold vein on their Last Chance Claim. News of the new strike traveled and a rush to this isolated area began. Hundreds of claims were staked. When the Gilbert brothers located another golden ledge, the camp was in a frenzy of excitement.

Clouds of dust could be seen for miles as truck after truck, loaded with lumber,



GHOSTS

by Mary Frances Strong

Photos by Jerry Strong



Main producer of the Klondike District was Klondike Mine. Visitors may tour sites, but watch out for open shafts and DO NOT remove equipment.

mining equipment, supplies and prospectors traveled the dirt road into camp. The atmosphere was conducive for a successful promotional scheme and the opportunists wasted no time. An old mine was hastily rechristened the "Original Gilbert," but the only "ore" it produced was \$50,000 from the stock sold by its promoters.

Gilbert flourished for two years and reached a peak population of nearly 500. Electricity lighted many of the cabins and street lights marked the main business district; though any reference to a water system is lacking. Among the three-score businesses serving the residents were a coal company, barber shop, bakery, stage depot and several saloons. Even though prohibition was in force, Gilbert was a "good time" town. But by 1929 Gilbert felt its own depression, and by 1933 it was a ghost.

Several frame buildings remain in the

once bustling town. What appears to have been an open-sided shelter over a gasoline pump stands at the main crossroads. Several dugouts will be seen along the road. Numerous headframes, adits and dumps mark the sites of former feverish mining activity.

MILLERS

Twelve and a half miles west of Tonopah on Highway 95, is the recently refurbished, overnight rest area known as Millers. Shade-covered tables, stoves, rest rooms and water are provided free of charge. This has been a popular stopping place for bottle collectors, rockhounds and desert travelers for a number of years. In fact, Millers has been a haven of rest since 1866 when it was known as Desert Wells Station — an important watering stop along the San Antonio-Silver Peak road. The station was also one of a series along the stage and freight route from Sodaville to Tonopah.

The completion of the Tonopah Railroad in 1904 brought an end to this era of freight wagons. The railroad chose the site for its repair shops and the name was changed to Millers in honor of Charles R. Miller, former governor of Delaware and a director of the Tonopah & Goldfield Railroad for over 20 years.

Tonopah ore wasn't milled locally until 1906 when the Desert Power and Milling Company erected a 100-stamp mill a half-mile south of Millers. The Tonopah-Belmont Mining Company soon followed suit with a 60-stamp mill. Miller's population swelled to nearly 300 and a small business district developed to serve the busy community.

Hopes were high at Millers as carload after carload of rich Tonopah ore arrived for processing. There were dreams of its becoming the largest shipper of bullion in the United States—possibly the world! The dreams were shattered in 1910 when

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the first of four mills was built in Tonopah; and, by 1912, all the ore from the big mines was being processed on their respective sites.

Desert Mill was eventually leased out and operated intermittently through the ensuing years. It made headlines again in 1927 when ore was milled from the Homestead lease at Gilbert.

In the fall of 1969, Desert Mill appeared to have long been idle. However, in 1970, I found the mill site occupied and "No Trespassing" signs posted on mill property. South of the mill are a few old cabins and the site of a former transformer station.

HANNAPAH

The old mining camp of Hannapah lies in an attractive setting of large junipers at the southern end of the Monitor Range. The area was heavily prospected starting in 1902 for many years and a number of claims staked. However, the first reported ore shipment wasn't made until 1908 by the Silver Glance mine. A townsite was laid out in 1906 and efforts were made to found a real town. A "free barbecue" was advertised to lure possible investors but only a few lots were sold. The proposed town never developed.

A brief resurgence of interest in Hannapah occurred in 1927 when the *Tonopah-Times-Bonanza* announced the World Exploration Company would develop the mines. The company reportedly planned to build a town for the workers that

"would have all the refinements of city living." First construction would consist of bunk-houses, mess hall, engine and pump house and the re-timbering of the shafts. Further plans were announced which included a headquarters building and homes for employees with electricity provided by an auxiliary plant.

A short item in the December 12, 1927 issue of the paper stated the dewatering of the Hannapah mine was in full swing and lowering five feet a day. The December 20 edition carried the news "High Grade Ore Strike on the Hannapah Extension." A reported 1600 ounces of silver at the 107 foot level with other ore going \$69.00 per ton was announced. To complete the story via the newspaper—a small item on January 17, 1928 announced the sale of the Hannapah mine to a Los Angeles group.

Hannapah today is a lonely place. A headframe stands guard over a deep shaft and the slightest breeze causes the metal sheets on the engine house to creak mournfully. One lone cabin marks the old townsite and a large hole in the refuse dump shows visits of bottle collectors. Hannapah is easily reached from Highway 6 via a mile and a half of good dirt road.

DIVIDE

Like so many mining camps, Divide has been known by two names and two strikes. "Eureka" cried Runge and Rochelle when they discovered a rich gold vein in 1901. The usual rush to the area began, resulting in a small but active camp called Gold Mountain. Numerous claims were staked but the original discovery, later purchased by the Tonopah-Gold Mountain Mining Company, proved to be the main producer. The news of fabulous strikes at Goldfield and the Bullfrog Hills (Rhyolite) is credited with luring most of Gold Mountain's prospectors to greener pastures and the camp declined.

In 1912, Wilse Brougher (one of Jim Butler's partners in the Tonopah claims) and a Mr. Winfield reorganized the original claim as the Tonopah-Divide Mining Company. Five years later they hit a rich silver vein while cross cutting for a gold vein. The year 1919 saw a mining boom at the new camp of "Divide" said to rival that of Goldfield. Over 350 claims were filed in an area of 40 square miles. A post office named Sigold, several busi-

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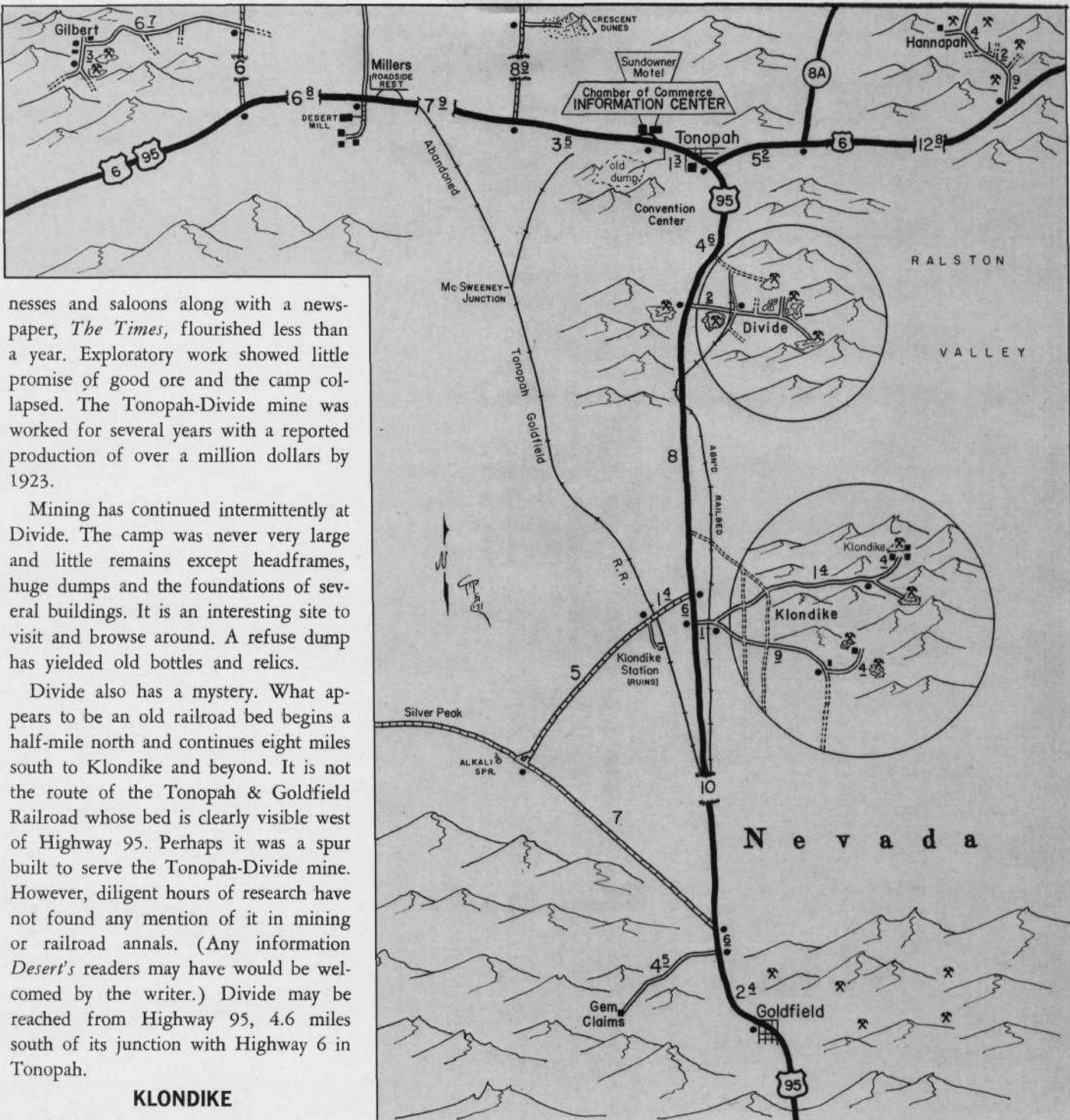
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nesses and saloons along with a newspaper, *The Times*, flourished less than a year. Exploratory work showed little promise of good ore and the camp collapsed. The Tonopah-Divide mine was worked for several years with a reported production of over a million dollars by 1923.

Mining has continued intermittently at Divide. The camp was never very large and little remains except headframes, huge dumps and the foundations of several buildings. It is an interesting site to visit and browse around. A refuse dump has yielded old bottles and relics.

Divide also has a mystery. What appears to be an old railroad bed begins a half-mile north and continues eight miles south to Klondike and beyond. It is not the route of the Tonopah & Goldfield Railroad whose bed is clearly visible west of Highway 95. Perhaps it was a spur built to serve the Tonopah-Divide mine. However, diligent hours of research have not found any mention of it in mining or railroad annals. (Any information *Desert's* readers may have would be welcomed by the writer.) Divide may be reached from Highway 95, 4.6 miles south of its junction with Highway 6 in Tonopah.

KLONDIKE

Klondike has the distinction of being the senior member of the "ghostly five," since its silver-gold-lead-copper ores were discovered in 1899. No great rush followed; but a small camp sprang up which supported a modest business district and post office for several years.

The majority of the mining occurred on the Original Klondike, which produced for over two decades. The mine lies in a steep, narrow canyon near the crest of the Klondike Hills. It has been developed by a labyrinth of over 25 tunnels and shafts. The mine is now idle but there is considerable evidence of in-

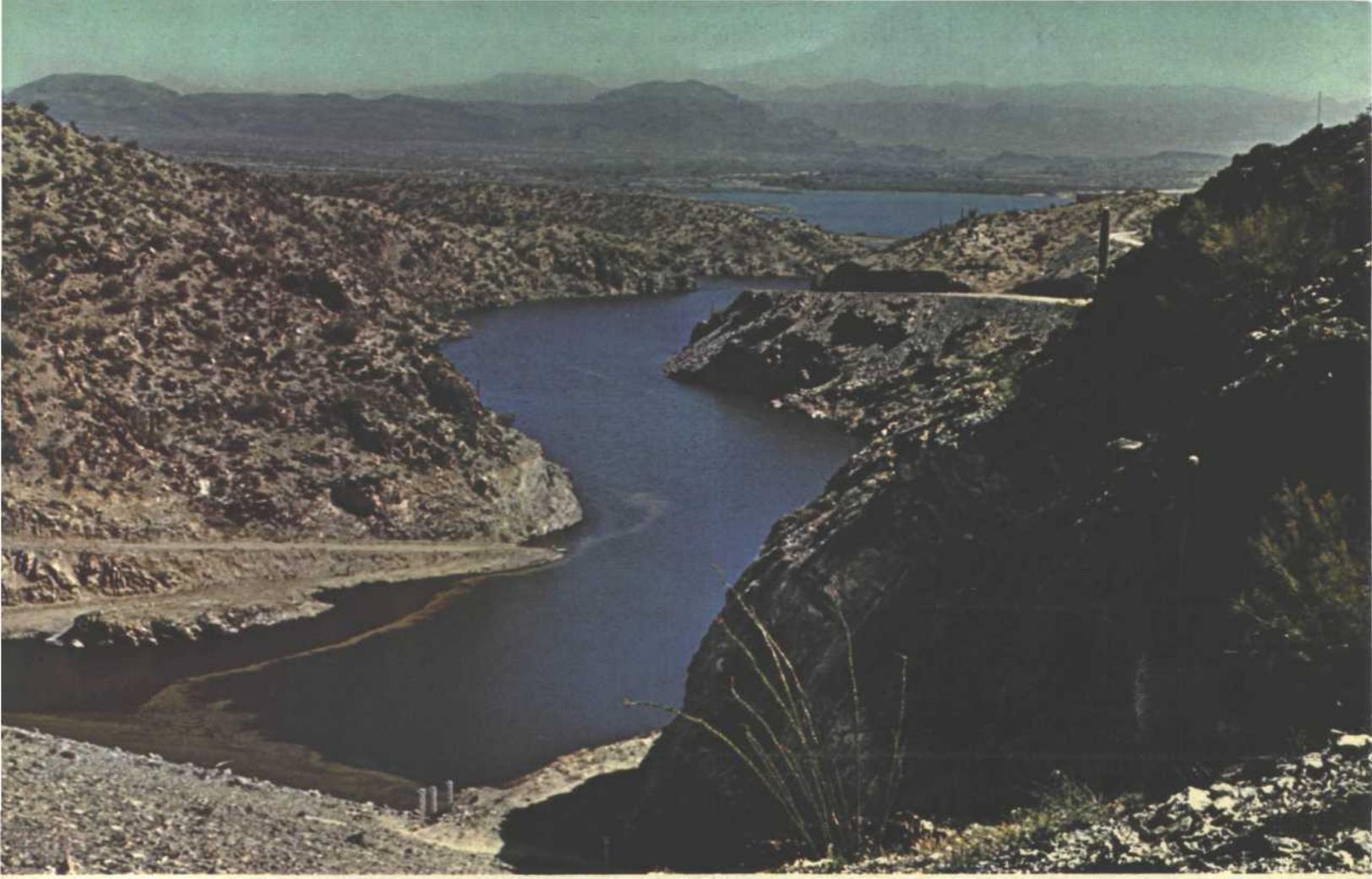
termittent activity down through the years. Several buildings remain including the hoist house and gallows frame, a cook-house and the superintendent's home.

There are sizable trash dumps in the canyons below the mine and flood waters have carried bottles and assorted items a mile or so down the road. The bottles ranged from blob-top to the late '40s. Relics and bottles will be noted throughout the former townsite which is indicated by roads grown faint with time. Klondike's claim to fame is recorded in history as "the camp Jim Butler was en route

to when he discovered the Mizpah Ledge at Tonopah."

A word of advice to ghost town visitors. There is a bit of nostalgia and romance in exploring old mining camps. It is only natural to look for souvenirs of these early days. The camps and towns were the result of the mines. The mines remain and they are still private property.

Nevada welcomes visitors to its many historical sites. Please remember that souvenir collecting or any vandalism of private property—posted or not—is against the law. "Western Law" was, and still is, tough on transgressors. □



ARIZONA'S LAKE ALAMO

by Lois Wolf Buist

STANDING ON the Overlook Area of the Alamo Dam in Arizona, we could see a wide expanse of raw beauty, progress and the final fulfillment of a prophecy made 134 years ago.

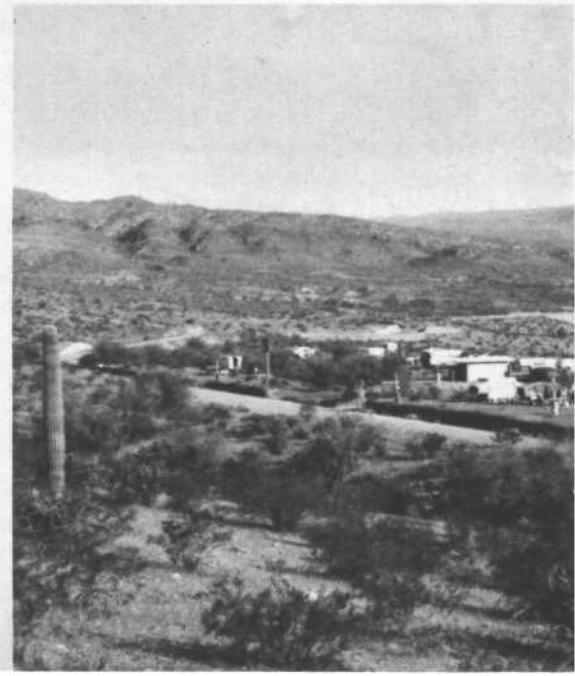
Within our view was Alamo Lake with its pleasure boats, water skiers and fishermen. To the side of us was the dam blending into the rocky canyon walls, and below us was the Bill Williams River, named for the mountain man who traveled this area in the 1830s. The river, like "Old Bill," has sometimes been quiet and peaceful and sometimes a rushing torrent. In the past it caused great damage along the lower Colorado, but now it is broad and peaceful.

Yet, there is no doubt that "Old Bill's"

adventurous spirit still lingers. For, although it was in 1837 he made the prediction "the time is not far distant when this land will teem with life," this particular sanctuary of Bill Williams' has remained relatively untouched.

However, due to the Alamo Dam, built by the U. S. Corps of Engineers in 1968, the area has opened up—and Bill Williams' prophecy is starting to come true. Gold and mineral prospectors were in the area after the mountain men, and they, like "Old Bill," left evidence of their rugged and dramatic lives — all which makes for exciting adventure "Bill Williams style" and a recapturing of the life of the Old West.

The dam, with its adjacent recreation



area, is approximately 325 miles east of Los Angeles on Interstate 10, then north about 45 miles from the turnoff at Wenden, Arizona. It was primarily built for flood control to protect life and property along the lower Colorado River. It also conserves water and provides a unique water-oriented recreation in the usually arid southwest Arizona. Built on the Bill Williams River, six miles downstream from the junction of the Big Sandy and Santa Maria Rivers, the reservoir has filled faster than anticipated and will soon be a sizable and permanent lake with a surface area of about 500 acres.

The Corps leased the land around the dam to the State of Arizona for operation as a 4,000-acre recreational area which is now called the Alamo Lake State Park. Besides a modern administration area, there are 25 spaces for tents and self-contained campers and 24 trailer spaces with water and sewer hookups. Flush

toilets and hot showers are also available, but there are no facilities such as grocery stores or gasoline pumps.

The lake provides good bass fishing, launching ramp for boats, water skiing and a restricted area for swimming. Wayne Perock, Ranger Supervisor for the park, told us future plans (dependent on funding) may include nature trails and a new camping area along the water's edge. He said all campsites would be spacious, and over-crowding would not be permitted.

We also met Hank Moore, the dam tender, who lives in the park with his wife, Elaine. Hank is an enthusiastic rock-hound and keeps a well-equipped lapidary shop as a hobby. He has a collection of many of the popular stones found in the area, especially fire agate, and a beautiful display of finished articles — rings, brooches, pendants — with individual settings to match the shape of the stones.



Photos
by
James McNown



Backed up by the Alamo Dam, the Bill Williams River (color photo) forms one of Arizona's newest lakes. Once a boisterous meeting place, the Signal Bar (above) is now quiet—and dry. Fishermen find good camping facilities (left) around Alamo Lake.

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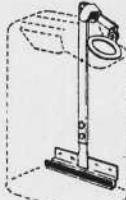
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We spent our first day at Alamo State Park just relaxing and playing around the lake. Then, early the next morning, we started on an exploratory trip through the surrounding area. To help guide us, we used a 15 minute series topo map of the Artillery Peak Quadrangle which is available from the U.S.G.S., Federal Bldg., Los Angeles for 50¢.

We forded the river at Brown's Crossing and drove toward the mining country where Hank told us were some good hunting grounds for rocks. Our pace was slow so we could fully enjoy the high desert and also be prepared for grazing stock that seemed to appear just over the crest of a hill, around a curve or in a dip.

The scenery in this area proved to be especially picturesque. It's one of the few known regions in the world where the Joshua tree and Saguaro cactus grow side

by side, and often we saw their human-like arms entwined around each other as if they were pleased to be together. There are also ocotillo and varied cacti as well as a large assortment of creosote bush and palo verde. And, if you are lucky, as we were, to visit the area during the spring, the whole desert is green with a myriad of brilliant flowers like an exotic bouquet.

We followed the road northwest to Yucca, turning east toward Signal and soon were in the rocky mining area. Using Artillery Peak, a lonely and prominent mountain, as a landmark for orientation, we explored some of the byways and inspected a number of small private claims marked by rocks piled in pyramids about three feet high. Some stood by a hole blasted in the rockside with rusty and abandoned equipment lying nearby. Others seemed to be optimistically waiting, but most of them looked forlorn—perhaps once a bright hope but now only a lost dream.

But the most exciting were the big mines such as The Priceless Mine—with its great, gaping holes left in the earth when manganese was mined at a rapid rate during World War II.

The McCrakin Mine, discovered in 1874, was one of the most noted of its time. In its single immense vein the silver ore assayed at from \$60 to \$600 per ton. It was the best equipped in Arizona with over \$6,000,000 derived from its ore.

The Signal Mine, lonely and decaying on its hilltop, was discovered in 1877 and profitable enough to be the main support of the town of Signal about nine miles away. The only signs left of its wild and industrious heyday are the crumbling bricks, rusty equipment and forsaken bar. There are flat areas next to the river where tents once housed miners—and a graveyard where many of them now sleep.

It was almost dusk when we turned back toward the campgrounds of the state park and again forded the Bill Williams River at Brown's Crossing. After the experiences of the day we felt we were fit candidates to enter "Old Bill's" inner circle of trail-blazing.

One of the greatest of the mountain men, he was also the most interesting—and the same goes for our trip through the Bill Williams Country. □



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Desert Life

by Hans Baerwald

Mother gives last-minute instructions as young hummingbird prepares to leave nest. Two tripods were used to hold 35mm camera with 600mm lens and extension tubes at 15 feet away.

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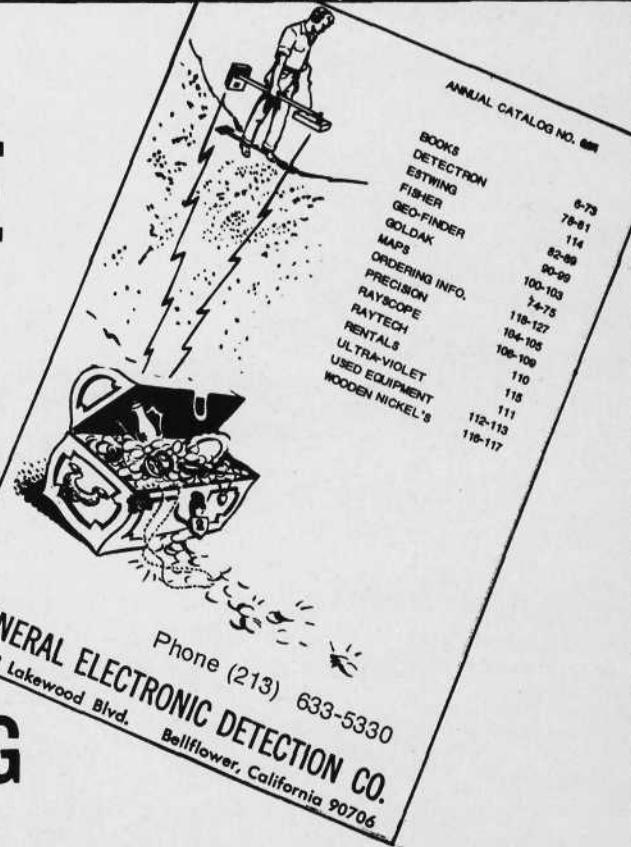
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When George Reiger, Boating and Outdoors Editor of Popular Mechanics, and his friend, Rene Tillich, decided to rent a vehicle—sans driver—in La Paz to go on a Baja fishing trip, the easterners found the project a bit more complicated—and more fun—than it would have been in New York City.

BAJA'S BARELY

EXT TIME a friend comes to you with plans for a vacation that will be off the beaten track, make sure you understand just what he means by a "beaten track." The roads of Baja California, which are best suited for the likes of an M4 tank, are certainly not the place for a Ford sedan nearly 130,000 miles old.

Yet in this weary automobile, averaging one flat tire a day on a sometimes beaten track that passes for highway, Rene Tillich and I circumnavigated the tip of Baja California Sur from La Paz south along the Pacific coast to Cabo San Lucas, then back north to La Paz along the Gulf of California coast. We almost didn't make it.

First, we met Senor Jose Castro through whom we introduced the concept of the rental car to La Paz. At least, I suppose we introduced this idea, for when we arrived in town after a four-hour flight from Los Angeles, we could find no local vehicle of any size, shape or condition that we could rent for our trip without also renting the services of its owner.

We came into town on a Sunday and it was not until Wednesday afternoon that we successfully persuaded one member of La Paz's legions of idle taxi drivers to let us have his machine without having either himself, his brother or his father to accompany us.

It isn't so much that the taxi drivers of La Paz don't trust Americans with their cars, for it's not likely that many people have wilder notions concerning the uses of the automobile than the Baja Californians. Rather, at the time, it was a determined curiosity about the crazy gringos who wanted a car for two weeks of desert driving that drew the different taxi unions together in a conspiracy to let us have a car—only after we agreed to take along (and presumably feed) at least one observer as well.

But we were obstinate, and after two days of haggling on our own, we enlisted the services of Senor Castro (known to his friends as *el bandido*), and our combined efforts finally broke the resistance of a Senor Ruben Martinez on the fourth day. With much solemn toasting with



While the author worked on the engine of their "automobile" evenings, his friend (opposite page) would get their dinner. Living was easy (below) on the uncrowded beaches . . .

only problem was finding a down slope so "Manana" would start the next day.



BEATEN BYWAYS

by George Reiger



tequila of this significant breakthrough for collective bargaining and the free enterprise system, we left La Paz for the little town of Todos Santos on the Pacific coast.

There we met Felipe, the local mechanic. Leaving La Paz, we had two spare tires in the trunk; by the time we had completed the fifty-mile shakedown run to Todos Santos (and we do mean shakedown!), we had two flat tires to repair. Felipe met us by the only gas pump in Todos Santos and guided us back to his bamboo workshop about a half-mile away. He took such care in repairing the flats that he turned this essentially nuisance task into something of an artistic labor—all the while chatting about the hazards of driving in Baja California Sur.

He told us that an uncapped tire with tread found south of La Paz was unusual and a brand new tire in this region was an automotive rarity. I recalled one day in desperation when Rene and I had walked to a used car lot on the Avenida Cinco de Mayo in La Paz and found a

group of men on their knees clustered about a new tire, speaking in whispers and awed tones about this miracle moulded by Señor B. F. Goodrich.

"All spare parts are a problem down here," Felipe told us. "Often the replacement is as old, sometimes older, than the part being replaced. Take your battery, for instance," he said when he emerged after a clangling, snapping session under the hood, "With so little spark left, it's a wonder that the battery can turn over the engine at all."

We were appalled by this information, but Felipe reassured us by saying that everything would be all right so long as we parked on the downslopes of hills at night and avoided using our headlights. (Fortunately, the radio would never be a drain on the battery; it had been smashed in an accident years ago.) Before we had fully absorbed the possibilities of such advice, Felipe went on to tell us about the inadequacies of our fuel pump, fan belt, and that our horn was already useless.

"Oh, well, the horn we can do with-

out in these trafficless deserts," I told him. It was Felipe's turn to look appalled.

"But no, senores! In Baja California a horn is more important than the headlights!"

Having thus far in our journey not

confronted any of Baja's single-lane, hairpin turns with a hurtling bus or rancher's truck coming from the other direction, we smiled at Felipe's nonsense and pushed on.

For the next two days we camped and fished along the Pacific coast from Todos Santos to Rancho Migrino. Always careful to follow Felipe's suggestion, we found small hills to park on so that in the event of complete battery failure, we would still be able to coast downhill and hopefully slip the clutch and the car into gear. After two days of exploring and fishing along 25 miles of coastline, we decided to abandon the cold seas and fog of the Pacific in favor of the warmer waters around Cabo San Lucas.

The inland area between Rancho Migrino and the Cape is more varied and (at least when we crossed it) less torrid than the long stretch of desert between La Paz and Todos Santos. Up and down and around small hills, flushing *paloma* (dove) and quail, discovering roadrunners and chipmunks and desert flowers at every turning, we thought this section of "beaten track" one of the most pleasant of our trip—that is, excepting the mile of desert through which we had to push our exhausted automobile. This dizzying form of exercise in a noon-day heat somewhat marred my sense of triumph in at last arriving at the tip of Lower California.

But the Cape is beautiful and after leaving *Manana y Manana* (by now the car had a name) with a local mechanic in order to have THREE flats fixed and to see if he might in any way be able to minister to the ailing automobile, we walked down to the beach. During the past 48 hours, Rene and I had become

fair makeshift mechanics, but as the local man had some spare parts from a wrecked airplane and a real wrench to work with, we didn't care to compete with a professional. Instead, we donned our diving gear and spent three days spear fishing.

Turtle, schools of snapper, yellowtail, jack and a rocky bottom littered with large lobsters — we tried to limit ourselves to what only we could consume, but with the number and variety of big fish available, we found ourselves returning to the beach with extra fish for the local people who were drawn to us by way of our rented automobile.

At last the car had revealed its true worth: the very hazards and breakdowns attendant on our taking this old auto through the deserts of Baja California provided a means to meet and get to know a little about people we might otherwise have seen only from a distance. We found that wherever we went on the peninsula, local men were quick to use our car as a source of conversation to satisfy their curiosity about ourselves.

After camping two days in a grove of shade trees on the Gulf of California's Bay of Palms, we decided to try offshore for marlin. As we were heading out from the beach our guide, who lived a full two miles from our campsite, pointed in toward the trees where the car was parked and began to discuss the relative merits of Ford Motors. When I asked him how he knew where we were camped, he grinned and pointed up and down to the length of the bay, saying, "Why, we all know where you're camped!"

And that evening to celebrate our catch of fish and to help distribute the surplus of marlin steaks, folks came from all around the bay area to turn our "secluded" site into grounds for a fiesta.

By the time we returned to La Paz, the battery was indeed dead, and most of our tires were on their last recapped laps. There had been half a dozen unsubstantial repairs made on and around the engine, and the car in third gear sounded suspiciously like a small bomber.

Yet, despite the obstacles and inconvenience, we felt rather sentimental about parting with *Manana* at the airport. We'll probably do our next trip to Mexico in something more sophisticated than an ancient Ford sedan. But we wonder if our memories will be as rich. □

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SHAKESPEARE IN UTAH'S COLOR COUNTRY Continued from page 25

Bryce Canyon is a fickle old girl and changes her face according to the mood of the day. The morning sun, striking on her weirdly sculptured rock formations, gives an appearance of shimmering and glowing with radiant energy. The midday sunlight she absorbs in a quiet, restful manner. Sunset brings out her soft hues of lavender, off-whites, yellows and burnt oranges. As the night deepens, the shadows lengthen and the enchanted setting sparkles gold and shimmery in the moonlight.

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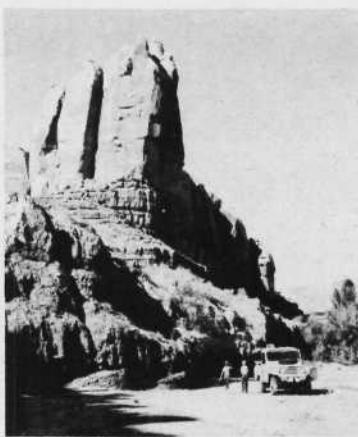
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most interesting is the fine green garnet called demantoid. It always contains wisps of a type of asbestos called byssolite. These wisps look much like a horse's tail, and the presence of it in a green gem is almost positive proof that it is demantoid.

Minerals of one locality have inclusions that the same mineral of another locality will not. The emeralds that come from the two largest mines in Colombia have unique inclusions that emeralds from other places lack. These are known as three-phase inclusions because they contain the three states of mineral matter; solid, liquid and gas. These emeralds contain tiny hollow spots within the crystal which are nearly filled with a liquid. The liquid, either a salt solution or liquid carbon dioxide, contains a floating bubble (probably carbon dioxide) and a cubic crystal of common salt. The mineralogical name for salt is halite. Exactly how these three became enclosed within the growing crystal is not easily explained, but their presence is a good diagnostic aid.

The river beds of Cambodia, Thailand, Burma and Ceylon are noted for fine rubies, sapphires, zircons, spinels and

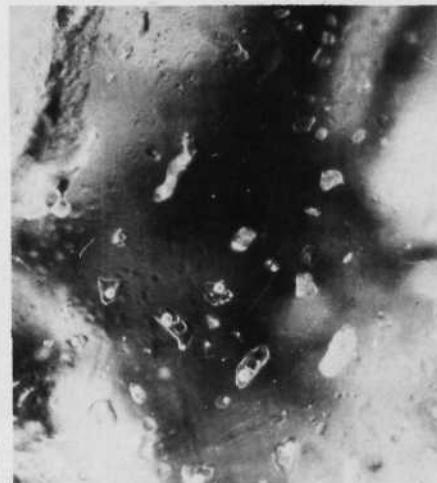
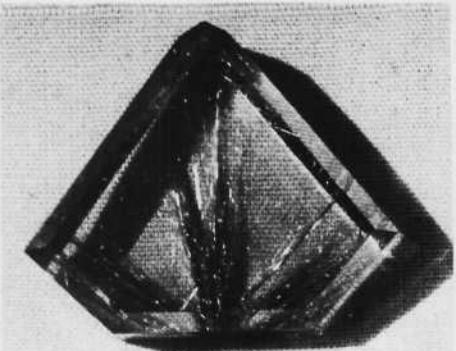


Photo of three-phase inclusions in emerald was magnified 30 times.

other gem minerals. A good gemologist can tell almost with certainty where a gem of one of these originated, examining it under a microscope. Zircons found in some of these localities show a unique halo-like inclusion. It is thought to be decomposition of the zircon due to irradiation from the included radioactive minerals. The story is almost endless.

To go to the other extreme, many people collect only minerals and gems that



Triple spray of rutile crystals in faceted gem.

contain inclusions. More than 100 different minerals have been found to be included in quartz. This is in part due to the fact that quartz forms crystals at a low temperature; lower than that of most minerals. It is a simple matter for a quartz crystal to grow around other minerals that formed at a higher temperature. It is no surprise then, that a large number of collectors specialize in quartz with inclusions. Such a collection is not only interesting to another collector, it is beautiful to almost anyone.

Many minerals, both in the crystalline and massive form, contain multitudinous small needle-like crystals of other minerals. If these are lying perfectly parallel, light will reflect from them and appear as a bright line at right angles to the length of the needles. If these are lying in only one direction, the mineral may be cut into what is known as an eye stone. The most famous of these is the cat's eye, an included chrysoberyl, and is very valuable. Other minerals will also have incusions that allow it to be cut into eye stones.

If the included needles are lying in two or three directions, the gems cut from them are known as star or asterated, stones. When the needles lie in two directions (at 90 degrees) the star is four-rayed; if they lie in three directions (at 60 degrees) the star is six-rayed.

Four-rayed stars are known in garnets. Six-rayed stars are found in ruby, sapphire, quartz and others. The methods by which these needles are included in the mineral is very interesting. The needles are usually the mineral rutile, and at first it was thought that the needles grew simultaneously with the growth of the crystal enclosing them. Investigation showed that, in the mineral

corundum (ruby and sapphire), the needles of rutile were lying exactly in line with certain crystal planes, and were occupying areas where the corundum molecules were least concentrated.

Corundum is hexagonal, thus the needles lie in three directions. This led to the supposition that at the time of the growth of the host crystal, the inclusions were only scattered particles, and the needles appeared after the corundum had formed. The idea called for some peculiar action, probably great heat, that would cause the needles to grow from the scattered particles. This was very difficult to prove. When the synthesis of star sapphires was attempted, this idea was tried, and it worked!

The manufacture of these fine stones is done by mixing no more than three-tenths of one percent of powdered rutile to the raw material. When the sapphire is completed, it is clear, with no needles visible. A subsequent baking in an oven causes the rutile to align along the correct crystal planes, and after cooling, the sapphires are now asterated.

Over the past decade or two, there has been much interest in cutting gems with included minerals. The usual eye and star types are very popular, but random included minerals are also of interest. Tourmaline and also rutile tend to appear as hodge-podge crystals in a number of minerals, and these are coveted by the amateur gem cutter. We had an interesting experience during the purchase of a fine piece of clear quartz with black tourmaline inclusions. We were trying to decide between three excellent slices, each priced at over \$10.00, when we heard a conversation behind us. One person said that according to the prices on the slices, he must have a fortune in his basement, but that his did not have those straws in it. Little did he realize that we were really buying those straws!

The type of inclusion, its size, alignment and color are some of the factors that determine the value of the gem. Certainly, anything that can add to beauty is desirable, whereas if it detracts, it is undesirable. Then again, a piece of sapphire that would make an excellent star stone, would be worthless if cut into a faceted gem. Not only the type of inclusion, but the thinking and knowledge of the cutter is very important as to the gem's final worth. □

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Railroad Property . . .

Relative to the article "Railroad in the Sky" in the January issue, isn't it against the law to trespass on railroad property, including even walking down railroad tracks?

RICHARD DOUGLAS,
San Diego, California.

Editor's Note: It certainly is against the law which is being enforced today more than it has in the past years. Violators can be arrested for trespassing and be either jailed or fined or both. See "A Peek in the Publisher's Poke" in this issue.

Pen Pals . . .

We are writing this letter as we learned the name of your magazine through the "Editor & Publisher International Year Book."

We, a group of Japanese young people, have formed a Pen Pal Club and are earnestly hoping to join hands with all the people of the world in making an exchange of letters and other items among themselves.

For the above reason, we are anxious to have the names and addresses of those pen pals in your country who might take an interest in our plan. If you would publish our request we would greatly appreciate your courtesy.

In case you are unable to do so, please pass this letter on to some schools or youth clubs so that they contact us. We hope you will be able to help us in our plan so that even if only in a small way we can contribute to international friendship and understanding.

MISS EIKO SOHMA,
International Pen Friend Club
P. O. Box 5313
Tokyo, Japan.

Greasewood . . .

The article on greasewood in the February issue was beautifully done. I have 10 acres east of Palmdale where greasewood is about the only growth. Instead of removing them, I clean the dead branches and twigs away and I must say they make an attractive shrub and require no water.

R. W. KNAGGE,
Little Rock, California.

Navajo Lament . . .

Your January issue showing Bill Crawley's photograph of Navajo arches against the sky and the article on the Beowawe Geysers by Mary Frances Strong was read with delight and nostalgia.

Then I picked up the February issue of *The National Observer* which contained an article entitled "Power Needs Jolt a Western Scene—Threat to Indian Way of Life" by David W. Hacker. The article states the Navajo and Hopi Indians have leased 64,858 acres of their land for strip mining for coal which will be used as fuel in a power plant to be erected at Page, Arizona.

The consequences will be devastating not only for the desert land, but also for Lake Powell. The article reveals all the horrifying facts including the estimate of what each Indian will receive for this Aztec sacrifice on the altar of progress.

The individual will receive \$24.00 a month for the term of the strip mining operation which will be for 35 years. The other dividends the Indians will receive are estimated in tons per day of sulphur dioxide. The U.S. Geological Survey says that over a 30-year period the water level at Kayenta, 20 miles north of Black Mesa, will drop a hundred feet.

Hacker ends the article with a lament of a Navajo who evidently did not agree with the tribal chiefs: "When the last of the coal is gone, the plants will stop, the money will stop and then the land will be dead. The sun will dim. The water will stink. Will the grass be gone? Will our people still know how to walk in beauty?"

E. S. NEIHL,
Kermit, West Virginia.

Titus Canyon . . .

Re Betty Tucker's article in the April issue on Titus Canyon, she does not recommend the Titus Canyon road for cars or trucks with campers. I would like to correct this statement as many of *Desert's* readers may omit this fascinating back country trip, thinking it is not advisable for other than a dune buggy or four-wheel-drive vehicle.

The Titus Canyon road is maintained by the Park Service and can easily be driven by any car, pickup or pickup with camper. During Thanksgiving as well as other winter holidays, hundreds of people make this drive in conventional vehicles. The road is a wide, one-way route and perfectly safe.

Death Valley is hit periodically by heavy cloudbursts and many canyons will carry raging torrents of water. Roads through them are either washed out or become temporarily impassable for general traffic.

Visitors should check at the Park Headquarters for road conditions through Titus Canyon. It is a drive everyone visiting Death Valley should include on their list of things to do.

MARY FRANCES STRONG,
Field Trip Editor
DESERT MAGAZINE.

Calendar of Western Events

This column is a public service and there is no charge for listing your event or meeting—so take advantage of the space by sending your announcement. However, we must receive the information at least three months prior to the event. Be certain to furnish complete details.

MAY 29-31, — ANNUAL RANDSBURG ROUNDUP sponsored by the Southern Area Clubs of the California Association of Four Wheel Drive Clubs. This is a family affair with contests and games for all ages. Well regulated and staged each year. For information write Chet Sanborn, 1577 Benmore Lane, Anaheim, Calif. 92805.

MAY 28-30, CALICO DAYS RODEO, Yermo, Calif. Rodeo at 2 P.M. Saturday and Sunday, dances, gymkhana, contests, Saturday 10 A.M.

MAY 29-31, JIM BUTLER DAYS, Tonopah, Nevada. Rockhound Roundup, Antique Bottle Show, Dune Buggy Races, guided gem trips, rock swaps and other family events throughout the weekend. Free camping, free admission. For detailed information write Howard Butler, P. O. Box 606, Tonopah, Nevada 89049.

JUNE 8-11, NORRA BAJA 500 RACE, starting at Ensenada. Write NORRA, 1616 Victory Blvd., Suite 200, Glendale, Calif. 91201.

JUNE 30-JULY 5, PORT HUENEME HARBOR DAYS, Port Hueneme, Calif. Events include parade, carnival, fireworks, boat rides, art festival, beauty pageant, Navy ship tours, etc.

JULY 3-5, TEHACHAPI MOUNTAIN FESTIVAL, eighth annual event includes a parade, air show, western dances, etc. Camping and trailer parking available. Write P. O. Box 34, Tehachapi, Calif. 93561.

JULY 3-5, ANNUAL CACTUS & SUCCULENT SHOW sponsored by the Cactus & Succulent Society of America, Los Angeles State and County Arboretum, 301 N. Baldwin Ave., Arcadia, Calif. Free admission. Write William Lockwood, 2481 Las Lunas St., Pasadena, Calif. 91107.

JULY 12-17, INTERNATIONAL SYMPOSIUM on Useful Shrubs of the World's Dry Lands, Utah State University, Logan, Utah. Write Dr. C. M. McKell, Utah State University, Logan, Utah 84321.

JULY 23-25, JEEPERS JAMBOREE, 19th annual event for FOUR WHEEL DRIVE VEHICLES ONLY. For applications for two-day and three-day trips write P. O. Box 308, Georgetown, Calif. 95634.

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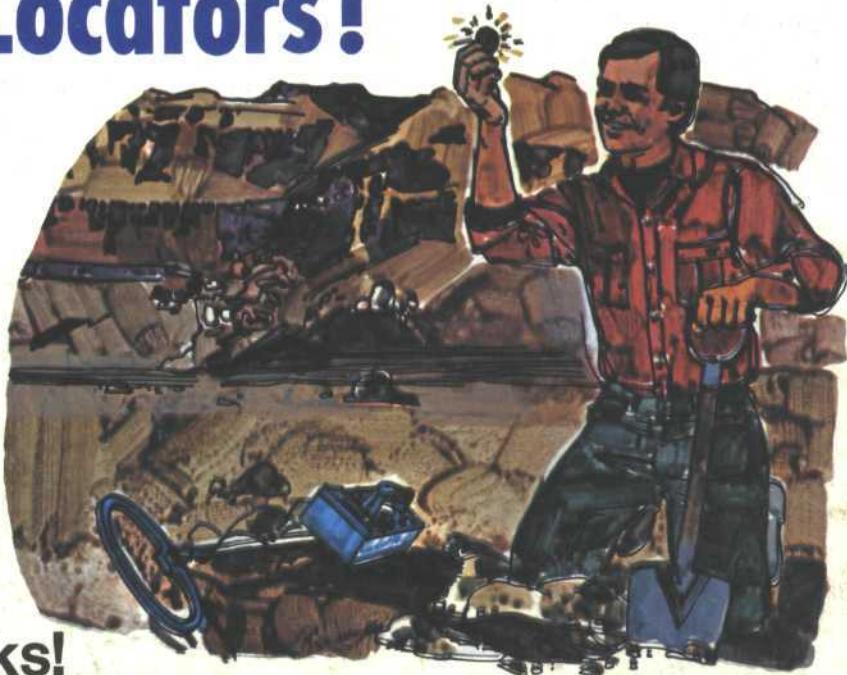
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